Scientific American.

THE ADVOCATE OF INDUSTRY, AND JOURNAL OF SCIENTIFIC, MECHANICAL AND OTHER IMPROVEMENTS.

VOLUME 6.] NEW-YORK, MARCH 8, 1851. [NUMBER 25.

THE
Scientific American,
CIRCULATION 16,000.
PUBLISHED WEEKLY
At 128 Fulton, street, N. Y., (Sun Building,) and 13 Court street, Boston, Mass.

BY MUNN & COMPANY,

The Principal Office being at New York.
A. T. Hotchkiss, Boston.
Dexter & Bro., New York City.
Weld & Co., New Orleans.
Stokes & Bro., Philadelphia.
Cooke & LeCount, San Francisco, Cal.
Courtenay & Wienges, Charleston, S. C.
John Carruthers, Savannah, Ga.
Barlow, Payne & Parken, London.
M. M. Gardissal & Co. Paris.
Responsible Agents may also be found in all the principal cities and towns in the United States.

TERMS---$2 a-year---$1 in advance and the remainder in 6 months.

Rail-Road News.

New York and Erie Railroad.

The people of Rockland Co., are up in arms against the bargain between the directors of this road and the Paterson, N. J., Railroad, whereby passengers are now carried through New Jersey from New York instead of going up to Piermont. They say the State advanced $3,000,000 for the construction of the road, and this had no intention of benefitting New Jersey. Application will be made to test the question of violation of charter by the directors of this road.

Hudson River Railroad.

The steamboat Armenia, Capt. Smith, commenced running her regular trips from Poughkeepsie to Albany, in connection with the Hudson River Railroad, last Monday. By this arrangement, passengers who may leave New York in the 4 P. M. train, will reach Albany about midnight. Those who leave Albany in the 10 A. M. train, will reach this city at 6 P. M. The Armenia stops at the following places on the trip going to and from Albany; Hyde Park, Kingston Point, Barrytown, Trivoli, Catskill, Hudson, Coxsakie, Stuyvesant, and New Baltimore. Doubtless the making of these stoppages will be a great accommodation to the travelling community.

Illinois Railroads.

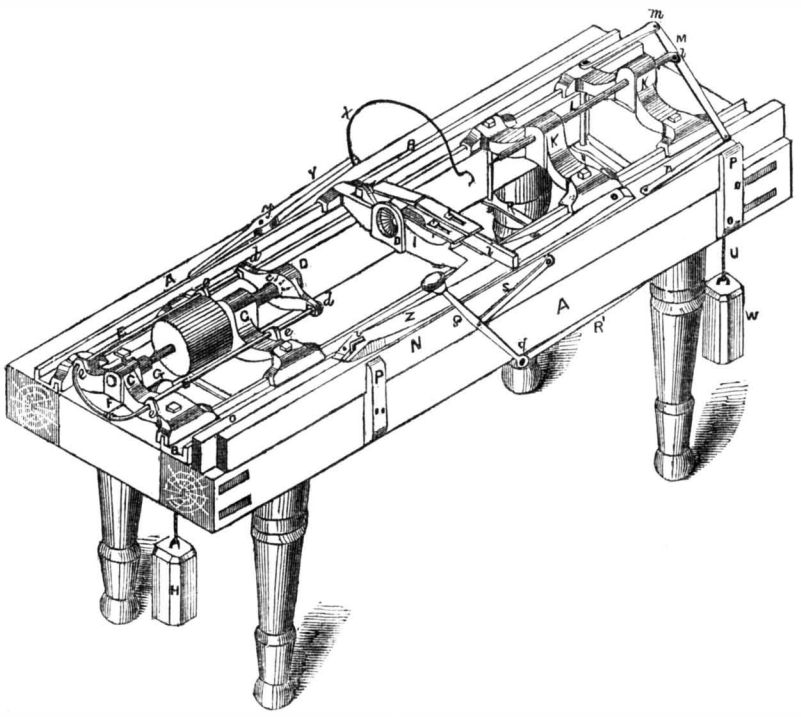
The Illinois Legislature has passed the bill incorporating the Ohio and Mississippi Railroad Company. This bill recognizes the charter of the road as passed by the Legislature of Indiana, and grants the right of way from Vincennes to Illinoistown, opposite St. Louis. The charter is complete of the road from Cincinnati to St. Louis, by way of Lawrenceburgh, Aurora and Vincennes. It is the longest road under one charter in the United States. The Directors are prosecuting this enterprise with the fixed purpose of completing the route as far as Jeffersonville road, 126 miles, so that passengers can, within one year and a half, be taken from Louisville to Cincinnati in five hours. Eleven hundred thousand dollars of means are now held by the company, and it requires but 500,000 more to build the road to that point.

Wisconsin Railroads.

A bill to incorporate the Milwaukie, Green Bay and Fon du Lac Railroad Company, has passed both branches of the Legislature of Wisconsin. The capital is fived at two millions of dollars, in shares of one hundred dollars each, and when five hundred shares are taken, and five dollars a share paid in, the company is organized.

The London Times says that, "at the end of the next half century, the Americans, having a population of one hundred and ninety millions, will make small work with the Canadas and the West Indies."

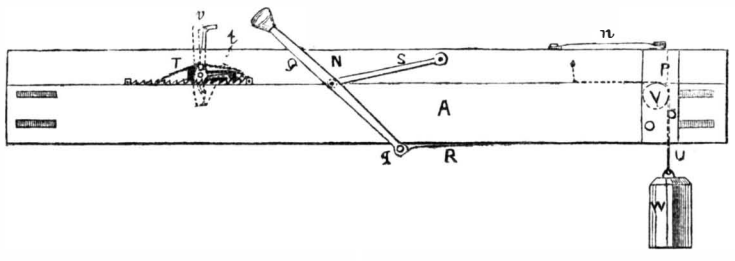
BAILEY'S IMPROVED TURNING LATHE.---Figure 1.



This is an improvement on Turning Lathes, by T. R. Bailey, of Lockport, N. Y., who has taken measures to secure a patent for the same. Figure 1 is an isometrical view, and fig. 2 is a front view of the contrivance for bringing up and throwing back the poppet centre. The same letters refer to like parts. There are two improvements, one relates to the quick centering of the rough sticks to be turned, and the other is a contrivance for throwing back the poppet centre, at the instant the stick is turned, and along with this there is a spring arm, which comes into play and throws out the stick whenever it is turned.

A is the bed of the lathe; B B are the slides; C is the mandril head, and *c* the mandril; D is a cone mouth-piece; it has two ears, *d d*, to it, and to each of these there is attached a rod, E, passing through guides, *e e*, on the mandril head. These two rods are connected at the back of the mandril head. F is a cord attached to the rods, E, at the back, it passes over a pulley, G, supported by the bed, and has a weight, H, suspended at its end to pull forward the mouth-piece, D. I is the cutter head, which is intended to be moved by hand or otherwise along the slides, B B. At this part there is another cone mouth-piece, D, which is secured to it in a position concentric with the line of motion. K is the poppet head, and L its movable centre. M is a lever, with a link, *m*, for a fulcrum; this lever is connected by a pin at *l*. N is a sliding bar; it slides along the front of the bed between a stationary rib, O, and twe side pieces; it is connected by a rod, *n*, to the end of the lever, M. Q is a lever hanging at *q*, on a bar, R', attached to one of the sliding down bars, R,

Figure 2.



of the poppet head; it is connected by a rod, S, to the sliding bar, N.

T (fig. 2) is a ratchet secured to the inner face of the sliding bar, N; *t* is a catch hung on a pin in a recess of the stationary bar, O, and taking into the ratchet, *v*, is an arm attached to it. U is a cord attached to the bar, N, ond passing over a pulley, V, hung in the bed, with a weight, W, suspended at its end, with a tendency to draw back the bar; X is the spring arm for throwing out the work. Its end is forked so as to embrace any stick that may be in the lathe. It is kept at some distance above the work until the stick is turned. Y is a lever hung near the centre of its length on a fulcrum *y*. Z is a guide pattern to guide the cutting tool in turning the particular form of the stick; it is secured on the top of the stationary bar, O. *i* is the weighted handle of the cutter tool; it rests on and slides along the pattern surface, Z.

The operation is as follows:—before inserting the rough stick in the lathe, the cutter-head, I, is moved backwards and close to the poppet head, and the operator then inserts the stick in the cone mouth-pieces, D D, and then moves up the cutter head until the end of the material comes in contact with the chuck. The lever, O, is then pulled towards the mandril head, and the poppet centre moved up to the work. The catch, *t*, always falls by its own weight into the rack, T, and thus holds the poppet centre secure while the operation of turning is going on. The cutter head is moved towards the mandril by the operator who holds the cutter handle, *i*. As soon as the stick is turned the whole length, the handle, *i*, strikes the arm, *v*. The catch, *t*, is raised from the rack, T, thus leaving the bar, N, free, which is instantly carried back by the weight, W, drawing back the lever, M, and withdrawing the poppet centre from the turned stick. At the instant the tool handle, *i*, strikes the arm, *v*, the opposite side of the cutter-head comes in contact with the forward arm of the lever, Y, causing the backward end to bear upon the spring arm, X, throwing it downward when it strikes the turned stick, throwing it out of the cone mouths, D D, on the floor. In most instances, however, the stick will drop by its own weight, after the poppet centre is moved back, but this spring arm ensures success.

This lathe is well adapted to turn broom handles, ballustrade rails, and articles of that nature and description. It is simple and easily managed, and ensured to turn out more work in a given time than any other lathe of the kind in use. More information may be obtained by letter addressed to Mr. L. A. Spalding, at Lockport, N. Y.

To Kill Slugs or Snails that Infest Houses.

Take some cabbage leaves and keep them before the fire till they are quite soft, after which they should be rubbed with fresh lard, butter, or drippings of meat, and laid in the place infested by the slugs. In a short time they will be covered by the vermin, when they may be taken and destroyed.

MOTHS.—The best way to preserve articles from the moth, is to keep them in trunks made of camphor or some wood with a strong odor. The exposure of clothes to the oil of turpentine destroys the moths that may be in them. Woolen clothes are not easily preserved. They should be often brushed and shaken. Furs cannot be preserved entirely, but then the fur moth is an insect very different from the common moth found in woolen clothes. All care should be taken of woolen clothes during the warm season, more especially winter clothes, which are then too often forgotten because not used.

Blacking for Shoes.

Three ounces ivory black, two ounces molasses, a table-spoonful sweet oil, one ounce vitriol, one ounce gum arabic, one pint of vinegar.

BLACKING BALLS—One pound ivory black, one pound lampblack, one quarter pound gum arabic dissolved in water, six ounces brown sugar, half an ounce of melted glue, one quart of water, and make all into balls.

FINE BLACKING FOR DRESS SHOES.—Beat up two eggs, add a tea-spoonful of alcohol, a lump of sugar, and ivory black to thicken; it should be laid on and polished like other blacking, and left a day to harden before it is used.

To Catch Cockroaches.

Put some beer, sweetened with molasses, in the bottom of a bowl, and lay up thin splints of wood for the roaches to travel up, after which they plump down into the bowl and cannot get up again.

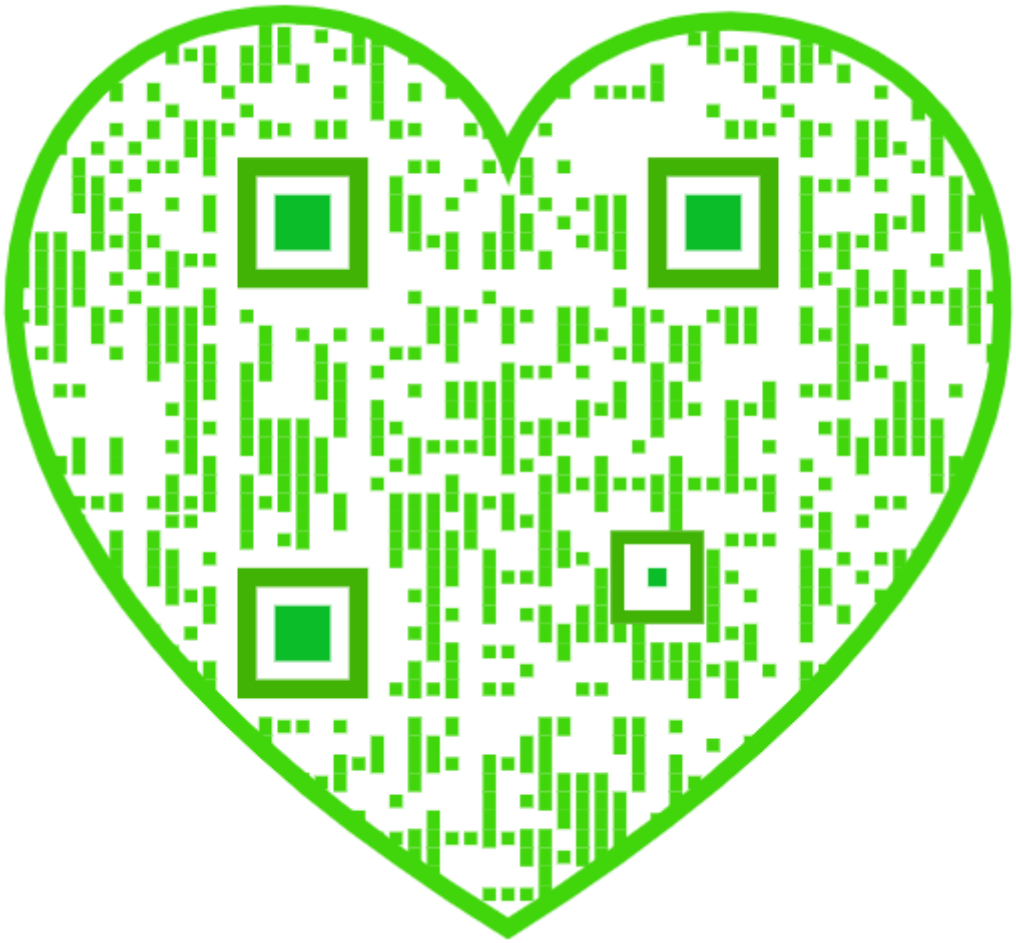
Doctors in London.

Two thousand five hundred and seventy-four medical men are practising at the present time in London. Of these, 2,237 are engaged in general practice; 187 as pure surgeons; 150 as physicians; and 52 as homœpathists. 646 are authors. Of these 312 have written books or pamphlets, and 334 have contributed to the medical journals. There are eleven general practitioners to every 10,000 of the inhabitants; seven pure surgeons to every 100,000; and rather more than six physicians to the same number; while each homœpathist has a gross number of 43,270 upon whom he may practice without interfering with the duties or emoluments of his colleagues.

Moving a House Across the Connecticut River.

Mr. Lyman Kingsley, bridge-builder, of Northampton, moved a two-story house, 26 by 30 feet, across the Connecticut river, at Chicopee, week before last.

© 1851 SCIENTIFIC AMERICAN, INC.



Miscellaneous.

Foreign Correspondence.

LONDON, 12th Feb., 1851.

Since my last letter was sent away, the list of admission fees for the Great Exhibition has been published by the Commissioners. Season tickets will be £3 3s. for a gentleman, and £2 2s. for a lady, that is, three guineas in the one, two in the other case, and allowing $4,84 for each pound, a gentleman's ticket amounts to the snug price of $15,21. These tickets are not to be transferable. On the first day of the Exhibition none but those who have season tickets will be admitted. On the second and third days after the Exhibition is opened, the price will be £1 for one day. On the fourth day it will be five shillings sterling, and on the 22nd day it will be reduced to 1s., excepting on Friday, when it will be 2s. 6d., and on Saturdays, 5s. No person is to go to the door expecting to get change, for none will be given. This is to prevent confusion and interruption at the entrance. Those friends who come here from our Republic must not forget this. They must go, excepting our big-bugs, on the first four days of the week, and have the exact change for tickets in their pockets. No person will be admitted to any part of the building during the Fair, unless he has a pass signed by Mr. Digby Wyatt, the Secretary. The application of every foreign exhibitor for a pass will be referred to the Commissioner of his country for his report, before it will be granted. Day tickets must be worn on a conspicuous part of the dress, and delivered up when leaving the building.

Before any person can enter the building, he will be required to sign the following declaration: "I hereby declare that I will conform to all such rules as the executive committee may find it necessary to make, for the convenience of the public and the exhibitors in the management of the exhibition; that I will not part with my ticket of admission, or be a party to the admission of any person not privileged to enter; and that I will give my best assistance at all times in protecting the general property and interests of the exhibition."

Strangers calling upon persons having the privilege of entrance, must wait in an anteroom, but not be permitted to enter the building. By referring to the name of the person wanted, and ascertaining if his number is deposited, the gate-keeper will be able to inform the visitor whether such privileged person is in the building or not, and if not, such visitor must be required to leave.

There is a strictness and closeness about all the arrangements, which would never be required at home in America. The value of the property exhibited, the sharpness and unscrupulous character of the Cockney thieves, account for all this, every person is forbidden to touch goods not his own, and all our locofoco exhibitors are forbidden to introduce matches or light of any kind. There is one grand rule adopted, viz., "no fees or payments of any kind to any officers or servants of the exhibition will be permitted, and any person receiving any will be dismissed.

A number of very ingenious articles and machines for the exhibition have already been brought into public notice, and it will excite no little pride in the bosoms of Americans, if their countrymen compete successfully with the well tried skill of the old European countries.

A most wonderful file, finished by a Sheffield file forger, named Hiram Younge, has been highly extolled. The length is 54 inches, breadth 3¼ inches, thickness ¾ of an inch, weight 28 lbs. With some small exceptions, the whole surface is covered with ornamental designs, all cut by hand with hammer and chisel, in a style which for artistic beauty is truly astonishing. The tangs (it is a double-tanged file) are sunk by filing, and are ornamented on one side with the national arms and the words "God save the Queen," on a shield; a front view of the cutlers' hall on the other, while the motto "Pour parvenir a Bonne foy." The other tang represents Atlas bearing the globe, with two lions couchant; beneath are the Sheffield arms, and a cornucopia on each side. On the reverse side appear the cutlers' arms with the emblem of industry —beehives and bees on the wing—on each side. On the moulding these words appear— "Cut, designed, and executed by Hiram Younge, a member of the Sheffield file trade." The centre or body of the file is ornamented on one side with an accurate, full length view of the great palace of industry, in perspective, forming an elegant and spirited sketch. The reverse side is occupied by a beautiful view of that imposing structure, the Sheffield Infirmary; while on the ends, between the centre and the tangs, are four views, illustrating the process of the file manufacturing.

It revolves on pivots, so that every part can be inspected in succession with ease, and the position varied to bring out the innumerable effects which change of position discloses, and exhibiting a pleasing variety of light and shade. The lighter parts possess that peculiar bright richness observable on highly ornamented silver plate. But the most remarkable feature in this elaborate ornamentation is a number of trees in full foliage, luxuriant as the work of the pencil. Each separate shade is effected by a distinct style of perfect tooth.

Along with this triumph of English art, and which the French and Swiss must try hard to surpass, there will be exhibited a tiny steam engine, with all its connected parts, weighing only about one ounce, yet perfect in every respect, and running at a high velocity —making all of 600 strokes per minute.

These brief touches of inventions will give readers of the Scientific American an idea of some things they may expect to see at the Great Fair, and those who will not attend the Exhibition may expect to hear regularly, if possible, from me about its wonders.

EXCELSIOR.

Gigantic Bird.

At a late sitting of the Academy of Sciences, M. Charles Bonaparte, Prince of Canino, presented a sketch of a large bird discovered by Mr. Parkins on the banks of the White Nile. It stands on legs four feet high, with a body like a stork, and a head like a whale. It has received the name of *baldniceps*, and the specific name of *rex*. At another sitting M. Geoffroy St. Hilaire presented the bones and eggs of a huge bird, a native of Madagascar. Two of the eggs are entire, but the other is broken. It is calculated from the measurement made, that each of them can contain eight litres of liquid, or as much as six ostrich eggs, or 135 hens eggs. M. Geoffroy St. Hilaire supposes this gigantic bird to be a perfectly distinct genus. He has given to the genus the name of *oppornis*, and to the species that of *maximus*. The remains exhibited were last year obtained at Madagascar by a merchant captain named Abadie, and by him sent to the Isle of Reunion, and thence to France.

Large Production of Printing Cloths.

This production of printing cloths at Providence, R. I., is not now far from 75,000 pieces weekly, and when the business is good, considerably more. About 16,000 pieces are consumed by the parties who manufacture them, the others are sold.

A Reduction of Fare.

An effort is now being made to prevail on the Baltimore and Ohio Railroad Company to reduce the fare between Baltimore and Frederick to $1,80. A corresponding reduction of fare, it is thought, will also be made by the proprietors of the line of stages between Hagerstown and Frederick. The object is to prevent the Pennsylvania Railroad from monopolizing the travel.

The Gopher, a species of ground squirrel with pouches on the outside of its cheeks to carry the dirt from its hole, is very plenty in Missouri and Iowa; but has never yet crossed the river into Illinois or Wisconsin. It only works at night, burrowing in holes under ground, subsisting on the roots of trees, grasses, and vegetables. There are persons who have suffered by their depredations for twenty years, who have never been able to catch, or even see, one of those nocturnal depredators.

Manufacture of Jewelry in Newark.

We learn from the Newark Daily Advertiser, that there are in that city 18 manufacturers of jewelry, employing 600 hands, at an average of $12 per week. The weekly product of manufactured articles is about $35,000, or $1,820,000 a year. In the manufacture of watch cases alone, about fifty hands are employed. In some manufactories chains are made; in others principally rings, while in others almost every article yet invented for the adornment of the person of both sexes, are manufactured, The gold used for a year past has been mostly the product of California, brought to Newark assayed and in bars; the precious stones forming a part of the ornaments are imported from Europe ready cut for use. The jewelry manufactured is sold principally to houses in New York, Philadelphia, and Boston, who supply orders for it from various parts of the United States, West Indies, and elsewhere, while a few of the manufacturers have established warerooms in New York, where they receive orders from abroad direct to themselves. Five steam engines are already used in Newark, in the polishing and other processes of this branch of manufacturing.

Navigation and Shipbuilding of the United States.

The Annual Report on the Commerce and Navigation of the United States, by Senator Corwin, presents some very interesting information relative to the rapid increase of our internal commerce especially. In 1815 the tonnage of foreign shipping was 854,254 tons; of inland navigation tonnage, 513,813 tons. In 1850 the foreign tonnage had arisen to 1,585,711 tons, and the inland tonnage to 1,949,743. In 1815 the foreign tonnage exceeded the inland 60 per cent. Now, the inland exceeds the foreign 25 per cent.! The "registered tonnage" has increased 700,000 tons; but the "enrolled and licensed" tonnaged has increased 1,400,000 tons. The whole increase from 1820 to 1850 (a period of thirty years), is 175 per cent. Now the growth of population in that period is 130 per cent., proving the growth of commerce and navigation to be faster than that of the people! Among the most obvious causes of this fact is the introduction of steam navigation on the western rivers. The steam tonnage on all the western rivers exceeds 300,000 tons; but this had no existence in 1815, the period of comparison in the above table.

Were the Hebrews Acquainted with Butter.

We have received a letter from Mr. N. R. Merchant, of Guilford, N. Y., directing our attention to the recent article on Butter, No. 23, wherein it is said that butter was unknown to the ancient Hebrews. He mentions several passages, such as Gen. xviii. 8, &c., where butter is mentioned. We know that butter is mentioned quite a number of times in the sacred writings, but those acquainted with biblical criticism agree that the word *chamea*, translated butter, signifies cream or thick milk, and not the substance we know by the name of butter. In Job xx. 17, it says, "he shall see brooks of butter." This was not our butter. In Proverbs, churning of milk is mentioned, but the original words signify squeezing, not agitation, like our churning.

(For the Scientific American.)

Yankee Clocks.

I noticed in your paper, a few weeks since, an article on Yankee Clocks, which was quite interesting to me; and I would state, for the gratification of the curious, that I have one, made by E. Terry & Sons, Plymouth, Conn., which has stood on the same shelf for more than twenty-five years, and has never stopped running (except by accident or neglect) but about 8 or 10 times, occasioned by intense cold —and it has not cost the first cent for repairs, and is, withall, a first rate time keeper. J. C.

India Rubber Patent Controversy.

There has been quite an amusing controversy going on in the Tribune between Horace H. Day, and Wm. Judson, respecting the Goodyear India Rubber Patents. Between the two the public is not much enlightened. Our laws —most miserably carried out, or defective in respect to trials—are to blame for delays in settling patent cases.

Praising Tea.

Oh! what varieties of pain do we not make our women suffer! And, in those varieties, what a part of *confidante* has that poor tea-pot played ever since the kindly plant was introduced among us! What myriads of women have cried over it, to be sure! What sick beds it has smoked by! What fevered lips have received refreshment out of it! Nature meant very gently by women when she made that tea-plant! And, with a little thought, what a series of pictures and groups the fancy may conjure up and assemble round the tea-pot and cup. Millissa and Sacharisa are talking love secrets over it. Poor Polly has it and her lover's letters on the table; his letters, who was her lover yesterday, and when it was with pleasure, not despair, she wept over them Mary comes tripping noislessly into her mother's bed-room, bearing a cup of the consoler to the widow, who will take no other food. Ruth is busy concocting it for her husband, who is coming home from the harvest field. One could fill a page with hints for such pictures.

Influence of Ozone.

In the village of Roggendorf, in Mecklenburg, towards the end of 1846, slight catarrhal affections were prevalent; the air at that time contained only slight traces of ozone. At the commencement of the year 1847, these affections assumed the most serious forms of bronchial and cattarrhal diseases, and whooping-cough affected a large proportion of the population. At this period there was perceived a considerable increase in the proportion of ozone contained in the atmosphere, and influenza was immediately developed. On the 9th of January, the ozonometer showed a still greater increase in the proportion of ozone in the air; the same day ten persons died of the influenza, and the disease gradually progressed to such an extent, that on the 21st few persons had escaped it. During all this time there was a perfect connection between the presence of ozone and propagation of the disease. Since sulphurous vapors prevent entirely the formation of ozone, it follows that the workmen employed in manufactories in which sulphur is concerned should escape its influenza. M. Splenger has fully proved that this is really the case.—[Hæule Zeitschrift.

Responsibility for Baggage.

A bill has been introduced into the New York Senate, providing that when the baggage of persons travelling on steamboats has been checked, and is not delivered on being called for by the party holding the check, he may be a competent witness in any suit brought by him for the loss of his baggage, to prove its contents as value. Put it through.

Rose bugs have been so common in some of the Eastern States, that on the sea-shore they have floated in winrows on the sand, having been driven into the sea by winds, and drowned. They have only made their appearance in this region, in any considerable quantities, within three or four years.

Valuable Property.

The property on the northeast corner of Broadway and Grand street, known as the Broadway House, has lately been sold for $90,000. The lot is 100 feet square, and the new owners design erecting on it a new building covering the entire lot.

One Eyed Thompson.

A notorious individual, bearing the above name, put an end to his life last Monday in our city prison. He poisoned himself by morphine, and left behind him a letter which bears unequivocal evidence of a moral obliquity of mind stamped with the deepest infidelity to honesty. He was a forger, spy, and quack, but was intelligent, ingenious, and this made him very dangerous to the community by his knowledge in fabricating bills, and changing their value by chemicals.

Communications.

We have a number of communications on hand awaiting attention and examination. Our correspondents must have patience—we have to exercise a great deal of it.

© 1851 SCIENTIFIC AMERICAN, INC.

The Manufacture of Glass.---No. 1.

A short time ago we noticed the great improvement which had been made in the manufacture of glass in England by the silvering of it inside. Since that time we have seen some beautiful specimens of it exhibited in this city, and we must say that it is perfectly dazzling; it far surpasses the ideas we had formed of its appearance. It has the whole appearance of bright silver, with a polish far surpassing that of the mere metal. The examination of the specimens spoken of, leads us naturally to say a few words on the manipulations of the art, and this we will now present to our readers in a series of a few artiticles, some of the information being derived from works on the subject, and some derived from those who are acquainted with the art.

The origin of glass making is in the dim obscurity of old history. It is attributed to the Phœnicians by one, and to the Romans by another. This question is not of much importance, however, except as a matter of curiosity, to excite to curiosity, for it never can be settled. It is well known that glass vessels were very expensive during the days of Augustus, the Roman Emperor. A crystal tumbler, which now costs about twenty-five cents, would then be valued at a sum as high as a thousand dollars. The first glass made in Europe was by the Italians, and Venice soon became celebrated for its beautiful colored glass, and for many years maintained a monopoly of its manufacture, by keeping the process a secret, and this they did with the Venetian mirrors as well as the colored glass for cathedral windows. Early in the 14th century the French commenced to make some glass by the secret having been carried from Italy by some French artists, yet for a long time but very little progress was made in its manufacture.

The first regular manufactory of glass established in England (for all previous efforts were desultory and limited in their operations) was set up in 1552, in Crutched Friars, where the finer sort was made, and at the same time at Savoy House, in the Strand, where flint glass was produced. The processes employed were improved in 1635, by the substitution of pit coal for wood in the furnaces, which was considered so important, that Sir Robert Mansell, by whom it was introduced, received in consequence a monopoly of the manufacture of flint glass.

In 1763, some Venetian artists were induced to settle in London and commence the making of glass. At this time very few of the cottages of the peasantry had glass windows. In America, oiled paper was the substance in common use, and a few years before our revolution, the first plate glass manufactory was established in England, and the manufacture conducted by Huguenots, who were expelled from France by the revocation of the Edict of Nantes. The manufactory was established at Ravenhead, in Lancashire, and it soon rivalled that of St. Gobain, in France.

Under the general name of glass, chemists comprehend all mineral substances, which, on the application of heat, pass through a state of fusion into hard and brittle masses, and which, if then broken, exhibit a lustrous fracture. Most glasses are transparent also; and the non-existence of this property is generally owing to the presence of some foreign and unessential substance.

The glass of commerce—that beautiful manufacture to which the generic name is most commonly applied—does not include so wide a range of bodies; and is always composed of some silicious earth, the fusion and vitrification of which has been occasioned by certain alkaline earths, or salts, and sometimes with the aid of metallic oxides.

There are five different and distinct qualities of glass manufactured for domestic purposes; viz.

Flint glass, or crystal;
Crown or German sheet glass;
Broad or common window glass;
Bottle or commen green glass; and
Plate glass;

Each of the five descriptions contains, in common with the others, two ingredients, which, indeed, are essential to their formation —silex and an alkali.

The variations of quality, and distinctive differences observable in glass, principally result from the kind of alkali employed, and its degree of purity, as well as from the addition of other necessary materials; such as nitre, oxide of lead or of manganese, with oxide of arsenic, borax, or chalk.

Silex is not equally proper in all its forms for the composition of glass. Sea sand which consists of spherical grains of quartz, so minute, as to be qualified for the purpose without any preparation except careful washing, is the form wherein silex is most commonly used for the purpose in England. All sea sand, is not, indeed, equally applicable to the glass-maker's purpose.

The employment of silex in rock form is now wholly discontinued in glass-houses, as it is known that some qualities of sand answer the purpose equally well, while the labor and expense of calcining and grinding are saved by the substitution.

Both soda and potash are well adapted to the purpose of making glass. They are used in the form of carbonates; that is, holding carbonic acid in combination with themselves as bases. The acid flies off during the progress of the manufacture, and the result is a compound of silex and alkali.

As already stated, the quality of glass is influenced by the degree of purity of the alkali. For making the finest flint glass, pearl-ash, which is potash in a purer form, must be used. The alkali must previously be still further purified by solution and subsidence, and then evaporating the fluid to dryness. By this purification a loss is sustained, amounting to between 30 and 40 per cent, in the weight of pearl-ash. Coarser kinds of alkali, such as barilla, kelp, or wood ashes, which are combined with many impurities, are employed for the production of inferior glass. Complete fusion and vitrification are accomplished by these means, the impurities even being of a nature to assist towards the production of these effects. The green color imparted to glass, is produced by the iron, which is present in a greater or less degree in these coarser alkaline substances. Barilla, when sufficiently cheap, is always chosen as preferable to wood-ashes or kelp.

A very small portion is used in the composition of glass, to occasion the destruction of carbonaceous matter which may exist in the ingredients. This salt must be added previous to the fusion of the glass. At a degree of heat much below that of the furnace, nitre will decompose, giving out much oxygen, and maintaining such metallic oxides as may be present in their highest state of oxygenation. It is thus of use in fixing arsenic, the volatile property of which increases as it approaches the metallic state.

Oxide of lead, in the form of either litharge or minium, is essential to the making of flint-glass, into the composition of which it enters very largely. This metal acts, in the first place, as a most powerful flux, promoting the fusion of all vitrifiable substances at comparatively low temperatures. It is also permanently beneficial in imparting highly valuable properties to the glass of which it forms a part. This, by its means, is rendered much more dense; has a greater power of refracting rays of light; possesses more tenacity when red-hot, causing it for that reason to be more easily worked; and is rendered more capable of bearing uninjured sudden changes of temperature. On the other hand, glass, into the composition of which much lead has entered, is so soft as to be easily scratched and injured if rubbed against hard bodies. Such glass is also improper as a recipient for many fluids which are of an acrid nature, by which it would be corroded and destroyed. Another great inconvenience attending the use of lead is this, that it does not become intimately enough united with the other components for the whole mass to assume an uniform density. It will almost always happened, that the glass at the bottom of the pot contains a larger proportion of litharge than that above. This inequality of density is continually increasing as the contents of the pot are diminished by the workmen; and is thence impossible to withdraw from it any two portions whose densities shall agree.

Glass is also fusible at lower temperatures according to the proportion of lead it contains. This quality, which would be mischievous for some purposes, is, on the contrary, beneficial for others. It is often essential to chemists that they shall be able, during the progress of their experiments, to bend the tubes with which they are operating.

Black oxide of manganese has long been used for clearing glass from any foul color which it might accidentally possess through the impurity of the alkali employed, and in particular from that green tinge which marks the presence of iron. This property of manganese, when in the form of an oxide, occasioned it to be anciently known as glass soap, a name which very accurately describes its use. The circumstances attending the employment of this substance in glass-making are of rather a curious nature. When added in a moderate proportion to any simple glass, it imparts a purple color; and should its quantity be much increased, this color is deepened until the color becomes nearly black. If, while the mass thus colored is still in fusion, either white arsenic or charcoal, or other carbonaceous matter be added, an effervescence is seen to follow, and the color becomes gradually more faint until it altogether disappears, and the glass is rendered clear and transparent. Provided the green hue which it is desired to counteract be considerable, the application of a very small quantity of manganese is not followed by any sensible tinge of purple; but the moment that the proportion is more than sufficient for the purpose, this color immediately appears, and must be corrected. This correction is performed in a very simple manner in the glass-house, by thrusting into the pot of melted glass a piece of wood, which, becoming charred by the heat, causes the purple again to vanish; while a slight effervesence as before described, and the escape of numerous bubbles of air, are plainly perceptible. If nitre be then added, the purple color will be restored.

White's Hydro-Carbon Gas.

A little more than one year ago Mr. White, of England, secured a patent in this country for improvements in apparatus for the manufacture of gas from water and resin, and his apparatus was exhibited at one of the Institute Fairs. After that, Prof. Fyfe, of Aberdeen, Scotland, came out with an analysis of the illuminating defect of White's gas, which was published in the London Mechanics' Magazine, and afterwards in the Franklin Journal. The take-for-granted-everything-said-by-a-professor people came to the conclusion that Mr. Fyfe had annihilated White's gas entirely; but it seemed that the people of Aberdeen do not think so entirely, and Mr. White's invention is about to beard the lion in his den. The North of Scotland Gazette says:

We learn with much pleasure that Mr. White has contracted to light, forthwith, the beautiful and romantic town of Dunkeld, Perthshire, including, we believe, the Duke of Atholl's palace, contiguous to it. This will be the first town in Scotland, that has had public spirit to adopt this system, as Southport was the first town in England. We shall therefore soon have the opportunity, without any very long journey, of thoroughly satisfying ourselves on this very important subject. Lockerby, we learn, will be the next town in Scotland to follow the example of Dunkeld.

We observe, from the Norwich papers, that the directors of the Chamber of Commerce there passed a unanimous resolution, at their meeting on the 21st ult., to adopt Mr. White's gas for lighting the principal parts of the city, in the first instance, previous to its more general adoption.

A friend in Lancashire, of whom we have made some inquiry, informs us that the extensive mills of Messrs. George Clarke & Sons, Pollard street, Manchester, having 1,600 ligbts (many hundreds of which are burning all day), are all supplied by one set of apparatus, consisting of two resin and two water retorts, placed in one small furnace, only 4 feet 3 inches of inside width, and that this easily and amply supplies the whole—equal to the consumption of many a town. He states that he has been several times to examine it, and that it is freely shown to any gentleman who applies for admission. It would surely be difficult to beat this. What says Mr. Fyfe? We would advise him to take the rail directly, and judge for himself.

Mr. White may well be satisfied with the progress his mighty invention is making against all opposition; and we trust that Aberdeen will, ere long, enjoy the benefit of his cheap and brilliant gas.

We have made some inquiries as to the cost of this gas, where 200 or 300 lights are required, and are informed that from 1 cwt. of resin, costing in Liverpool 3s. to 3s. 3d, 1,800 to 2,000 feet of most splendid gas are obtained, besides three gallons of residual oil, for which a wholesale house in Manchester will give all the year over, 7d per gallon, or 1s. 9d. for every cwt. of resin used, and pay the carriage. The price of the gas is, therefore, an easy calculation. The Commissioners at Southport refuse to take 7d. per gallon, saying they can make more of it."

Pitcairn's Island.

Capt. Wm. B. Drew, of the ship Lebanon, of N. Y., has communicated to the Boston Journal, a very interesting account of a visit to Pitcairn's Island, in the Pacific, made by Capt. Arthur, of ship Zenas Coffin, of Nantucket. In an interview with Capt. Drew, Capt. Arthur stated that the Islanders were fine looking, well dressed, orderly and virtuous, spoke good English, and were hospitable in the highest degree—furnishing him with water, sweet potatoes, fruits, &c., in great abundance. The number of inhabitants was one hundred and sixty, of whom a large proportion were children. In 1831, the number was but sixty-five. The island is represented as "almost a Paradise" It was stated by one of the principal men, that vermin, as well as weeds, were unknown for many years, until introduced by ships calling at the island. Captain Arthur states further, that the islanders had agreed to furnish an American ship which touched there, with 1,000 bushels of sweet potatoes for California, in the Spring, from which it is judged that the cultivation of that root is carried to a considerable extent. The island was originally settled by a company of mutineers, from the British ship Bounty.

Steam.

Dr. Ethan Baldwin, of this city, has made a new and wonderful discovery in the application of steam. He converts steam, at 120 lbs. to the inch, into cold water, and this water into steam again, without the use of condensing water or fuel, and this steam returns to the boiler at a heat and pressure very nearly, if not quite as great as when exhausted from the working engine. By this improvement it is claimed that a visit to the Celestials will be compassed in a week; and a man will be able to breakfast in Philadelphia, and awake on board a steamboat in New Orleans early the next morning.—[Model Courier.

[We venture to say that neither Dr. Baldwin of Philadelphia, nor all the doctors in the world, can do the above clever trick. Steam can, and has been, condensed by exposure to a cold surface, so as to use no injection water, and it has often been proposed to bring the exhaust steam through the furnace in a pipe, but neither of these plans is of the least working value.

Interesting Chemical Discovery

At a recent meeting of the Boston Natural History Society, Mr. Wells, of Cambridge, announced that Mr. Francis H. Storer, a student in the Cambridge Scientific School, had recently discovered, at the Cambridge laboratory, iodine in the ammoniacal liquor from the Boston gas works. It was the first time that it had been detected here, and the observation was interesting as showing the probable existence of this substance in the waters which had supplied the plants which made up the coal formation.

It is stated that 4,000 persons, who do business daily in Boston, reside out of the city. This is the natural effect of low fare.

© 1851 SCIENTIFIC AMERICAN, INC.

New Inventions.

Improvement in Planing and Tongueing and Grooving Machines.

Messrs. Rufus and C. S. Bixby, and John Garst, of Dayton, Ohio, have taken measures to secure a patent for improvements in planing, and stationary tongueing and grooving cutters. The planing knives are stationary; a set of section roughing planes, are set transverely to the motion of the boards, to cut off small portions of the rough surface at once, and then the whole face is finished by a single smoothing plane set behind those which operate upon the rough surface. Each plane, therefore, is made to perform but a small part of the operation, and thus far ease of working the planing action is spread over, it may be said, a wide surface. The tongueing and grooving is performed by stationary gouges set in the frame behind the planes, so as to take into the edges of the board and match them after the planing operation. The principal new feature in this does not relate to the cutters but to a fine revolving chain belt on each side under the gouges, which, by its continual revolving, keep the cutters clear of chips. This is a very important improvement.

Pendulum Ship Ventilators.

Mr. John Hirst, of Brushville, Long Island, has taken measures to secure a patent for a mode of ventilating vessels by a pendulum motion, derived from the motion of the vessel, to work a set of bellows, which takes in pure air by a tube from above and expel it by another pipe, leading from an under passage of the bellows below. To give the bellows a quick operating action, a pendulum rod with a heavy weight at its lower end, is secured to the movable cover of the bellows. This weighted rod, is kept by guides from flying too far out, and the weight, whenever it passes the vertical line of the centre of gravity has a quick motion to the side, thus opening the bellows to draw down good air from the top, by one roll of the vessel, and then swinging quickly to the other side, at the contrary roll of the vessel, to expel the air and send it fresh through the vessel. This same plan can act to expel foul air in the same way. The power derived is an inexpensive one, namely, the natural motion of the vessel. Valves are constructed in the bellows and pipes, to work upon the principle mentioned. The supply of air can be shut off by a valve, if there is too much forced through the vessel.

Improvement in Carriages.

Mr. James C. Spencer, of Geneva, N. Y., has invented an improvement in carriages, for which he has taken measures to secure a patent, that must ultimately come to be very generally adopted, as light carriages can be constructed by adopting his method, at much less expense than by any other plan with which we are acquainted. No reaches are used; the body of the carriages is jointed at the middle, and has an eliptical spring just above the joint. Strong curved springs, secured to the body of the carriage and supporting the same, are secured directly to the axles, in such a way that a turning axis bolt unites the front part of the carriage body, and a like one the back part to the axles, thereby allowing the front and back wheels to turn in a very small compass without any intervening reach under the seat of the carriage. The jointing of the carriage body and the eliptical spring under the same, gives the body of the carriage an easy accommodating motion when the wheels are passing over uneven roads. No bolsters, &c., are employed.

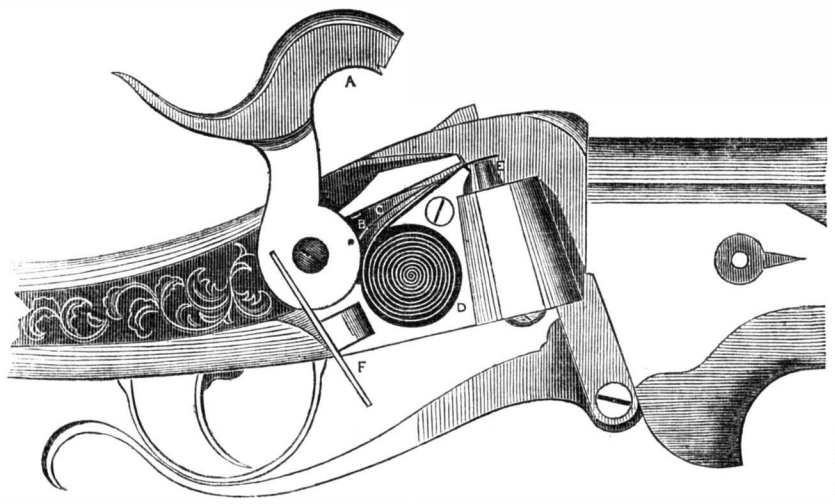
Improved Printing Press.

George Bruce, Esq., of this city, has offered a premium of $1,000 to the first inventor who shall construct and submit for judgement a Press which will throw off 500 large Imperial sheets per hour and can be sold for $500. A Committee of competent persons will in due season be chosen to examine competing Presses and make the award. The Patent-Right of the successful Press will be the sole property of the inventor, and ought to insure him a moderate fortune.

IMPROVEMENT IN RIFLES.

This is an improvement in Rifles, combining Sharp's Patent Loading Breech, and Dr. Maynard's Patent Self-Priming Rifles. In No. 25 of our last volume we published an illustrated description of Sharp's Rifle, and we would refer our readers to that for an explanation of the manner by which this rifle is loaded at the breech.

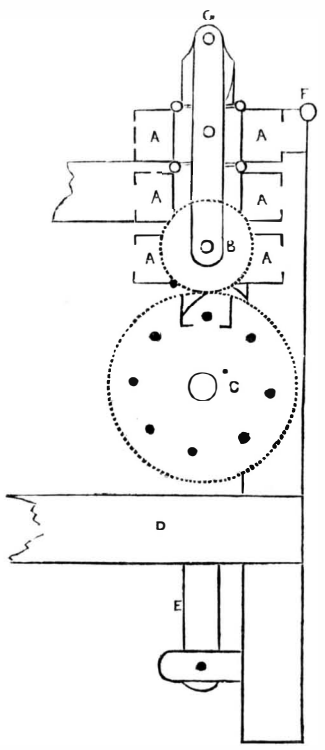
The accompanying engraving only illustrates the improved mode of priming, which is the invention of Dr. Maynard, of Washington. The engraving is a side view, with the priming box open; no caps are used; the priming is a patent preparation of percussion paper made into a coiled ribbon, represented by D, and placed in the inside of a small box, which is now represented as being open. F shows the edge of the lid; A is the hammer; E is the nipple of the priming orifice. It will be observed that the strip of priming ribbon passes over the top of the nipple. It will also be noticed that there is a notch in the end of



the hammer, A; this cuts off the strip of ribbon as the hammer is coming down on the nipple, and when the hammer strikes the prepared paper, it being percussive, the powder is ignited, and the gun discharged. The question may now be asked, "how is the paper fed over the nipple for a new priming, after having been cut off by the hammer?" This is done by a small flat steel spring, B, secured on the periphery of the ring of the hammer joint. When the hammer is drawn back, it will be observed that the flat spring, B, is moved forward, pushing the priming strip over the orifice of the nipple for the next discharge. When the hammer, A, falls down on the nipple, it will be observed, the spring, B, is drawn back for a new feed of the paper. This would draw back some of the paper, were it not for another small stationary flat spring, C, which holds the paper so as to allow it to be fed only up and along the metal incline to cover the nipple. This is the most ingenious, simple, and effective method of priming firearms ever discovered. Albert S. Nippes & Co. have the exclusive right to apply Dr. Maynard's Primer to Sharp's Rifle, with the exception of the U. S. Government privilege to the same. These rifles, thus improved, are manufactured and sold by Butterfield & Nippes, Kensington, Philadelphia. Capt. Tansil, of the U. S. Marine Corps, and a board of Ordnance officers, have reported in favor of the warlike instrument. A ball was fired by it along the surface of the Potomac, and it was loaded and fired again so quick that the two balls were seen skipping along the surface of the water at one time, a good evidence of the speed whereby it can be loaded.

For the Scientific American.

Improvement in Weaving Looms.



On February 4th, 1851, letters patent were granted to Enoch Burt, of Manchester, Conn., for improvement in fancy check power looms, of which the following is his claim:—

First, he claims the connecting a series of shuttle boxes, by joints, at their lower corners, or attaching them to a flat jointed chain and connecting their extremities so as to form an endless chain of boxes, and bringing them into a parallelogramic figure by means of two square heads of a size to fit the space between the joints of the boxes or the chain, and hung on journals, one on the end of the race-beam, and the other on the sword of the lay, substantially as heretofore described.

Second, The combination of the irregular worm, the two sets of double rectangular levers, the connecting bars, and the vertical notched levers on which the bars operate, the pin-band and knees, and the wires connecting the knees and vertical notched levers, through which the notched are moved forward and backward, to embrace the bars, giving them and the heddles an upward and downward movement in any irregular manner desired, substantially as described in the specification, constituting a new and advantageous modus operandi of forming variegated sheds.

The improvement in shuttle boxes, here claimed, is illustrated by the following, which is an end view of the boxes and a part of the loom; D is a section of the loom frame, E is the sword of the lay; F is the top of the breast-beam; A A is the chain of the shuttle boxes; O O are the journals of the two square heads, over which the chain of boxes is stretched in an oblong or parallelogramic shape; B is a wheel on the end of the lower square; C is a wheel double the size of the preceding and taking into it, having on its face eight pins—the moving of this wheel the distance of one pin carries the wheel, B, and the square head to which it is attached, one quarter around, and consequently shifts a shuttle. The running shuttle is on the top, level with the top of the race-beam. The pins in the wheel are acted upon by two levers, which are brought into contact with the pins, on one side or the other, as the figure wheel directs, thus shifting the chain forward or backward one shuttle. G is the end of the picker rod, in the hanger, which supports the outer end of the squares on which the chain boxes are hung. This improved form of boxes, has manifest advantages over every other that has been used.

It is apparent, upon inspection, that any number of shuttle boxes may be added, by simply moving down upon the sword the lower square, and that without impeding the speed of the lay, as the increase of gravity by increasing the number of shuttle boxes, extends downward towards the centre of motion of the lay. The shuttles also, on this plan, will shift with the utmost ease, whatever the number may be, as those on one side of the square head exactly balance those on the other, one side descending whilst the other side rises, thus producing an equipoise, without the help of extraneous weight or springs.

The harness motion comprising the second claim, is also very simple and easy, and can readily be adjusted to any variety of modes of springing the heddles to form the shed, however irregular, but the several parts to effect this, are so placed in the loom as to make it difficult to display them distinctly by a plate, which is in this part omitted. This improvement, in fancy shift box looms, is evidently not only the most recent, but also by far the most important that has hitherto been made.

The enterprising or the large manufacturer might find it advantageous to become acquainted with this improvement, as the inventor being considerably advanced in years, might doubtless be disposed to part with it in toto, on reasonable terms. * *.

[The inventor, Mr. Burt, is the oldest and youngest inventor and improver of check power looms in America. Like Dr. Cartwright, he is a clergyman, with a fine mechanical taste and great inventive faculties. The first check loom that was set in operation in this State, was in 1839 by a Mr. J. Allen, from Scotland. He could not get his loom to operate successfully until he consulted Mr. Burt, and employed an element of machinery patented by the Reverend inventor. The claim referred to as published by us in our list, was an exact copy taken from the Patent Office List which we receive officially every week. It struck us at the time as something curious, but Mr. Burt will remember his communicating with us in 1848 about a rotary engine, and we thought he had secured a patent for some improvements on the same. We now see that we were not clear sighted enough to point out the error at the time.

We would call the attention of our manufacturers to the improvements of Mr. Burt, they are valuable and of the utmost consequence. The only great and permanent relief that we hope for our northern manufacturers, is from improvements in machinery.

New Printing Press.

The Auburn Advocate says, "Mr. I. L. Burdick, of Utica, has succeeded in inventing a new cylinder printing press, which is certainly far ahead of anything now in use. This press prints both sides of the paper by one revolution; will print twice as fast as the Hoe's press, and do its work as well or better than the Adams press, and it requires but half the labor in feeding it, while the cost of the machine, it is believed, will be less than that of any power press. There is one of these presses now at work in Utica."

[This is a pretty strong paragraph. We cannot trust to its general correctness, and would like to hear some other testimony on the subject.

Respirator Cravat.

A new cravat has just been brought out in Manchester, England, for the benefit of those who have weak lungs in that foggy country. It consists of a cloth which allows the wearer to breathe freely through it without imbibing moisture. The air inhaled is rarified by passing through it, so that it is warmer for the lungs. The moisture of the atmosphere is also, as it were, screened, and the lungs thereby relieved from burdensome pressure.

A Nineveh Fund.

A subscription has been set on foot, in England to raise a "Nineveh Fund" to enable Mr. Layard to prosecute his researches—the funds provided by the British Government being exhausted.

© 1851 SCIENTIFIC AMERICAN, INC.

Scientific American

NEW YORK, MARCH 8, 1851.

Remarks on Light and Watered Silk.

Long before the daguerreotype art was discovered, and long before Hunt had written his able work on the "Researches of Light," many phenomena of light were known. Chapital, in the last century, made the discovery, that when the rays of light were particularly directed upon certain parts of glasses containing solutions of certain salts, the solutions crystalized upon the sides of the glasses which were in contact with the light, and no others. Beccari, Scheele, and others, found that *horned silver*, which is a beautiful white, changed in *a few minutes to violet, then black, when exposed* to the sun's rays in a transparent glass. Sennibeir made the discovery as early as 1790, that the muriate of silver, when exposed to the violet rays of light became black in 15 seconds; exposed to the purple, 23; to the blue, 29; to the green, 37; the yellow, 5 minutes 30 seconds; the orange 12 minutes, and the red 20. He says, "the rays of the three last colors would not produce such a dark violet color in any length of time, as the more refrangible rays." This able French chemist came very near discovering *actinism*. Bertholett, however, took the ground that light produced changes in color by an effect similar to combustion. There can be no doubt but that all the colors we perceive are the reflections of very minute crystals, and these crystals are the result of a great chemical resolving law in nature, and that law is actinism, as set forth in an article in our columns last week.

In connection with light and photography, there is still a difference of opinion among philosophers respecting *light* as a distinct matter of itself. Some at once say, "light is an imponderable subtle fluid, or matter of itself;" others more cautious say, "light is conveyed to us by vibrations," and this is all the length they go, but afford no very good argument even for this theory, and although it does not at all militate against or conflict with the theory that light is a subtle fluid, it only relates to its mode of action. Light may be a subtle, imponderable fluid, and its mode of action may be by vibrations, and these vibrations caused by resisting media, or the shooting from angle to angle like lightning in a resisting cloud. The vibrations of light are wave lines, and these can be daguerreotyped by mechanical pressure. We will now allude to a process of manufacture in proof of this—a proof which no philosophical work that we know of mentions, and a fact with which philosophic authors seem not to be acquainted.

If we take a number of fine threads, say 1,000, and hang them up against the window light, perpendicularly, like weaver's heddles, then by taking another set and hanging them up the same way, so as to have a double tier of threads, we will perceive by looking through them, fine waving lines. The warps for webs, when passing vertically between two parallel rollers on a dressing-frame in a cotton factory, show this phenomena in a peculiar manner. It is also exhibited in double screens of fine wire placed in the windows of some houses. It does not merely require the threads (which are resisting lines) to be parallel and perpendicular, they may also run horizontal and at right angles to the perpendicular lines. Let any person take a plain woven silk handkerchief, fold the two selvages together, and hold it up double before the eyes against a window light, and all the phenomena of the wave lines are plainly revealed. These wave lines are of a form exactly like the *watered silk* worn as an article of apparel. Well, how many know the way watering is produced on silk? It is not woven in, for the silk is woven quite plain. Hard, plain, worsted fabrics, such as "marine curtains," are also watered; this is not woven either. We suppose that most people think the watering is produced by machinery, such as rollers with waving surfaces cut on them, or by some such process; this is not so, the watering is produced in the most simple manner, by the simple pressure of the silk between plain surfaces. Take some pieces of coarse plain silk, fold them double, with the one selvage upon the other; lay them between sheets of pasteboard and place them flat in a press, such as a bookbinder's, and submit them to a severe pressure, taking care to let them remain in such a situation for a few hours. When this is done, take them out and it will be found that the two inside surfaces of the pieces of silk, are finely wavelined (watered)—the wave lines of light are thus daguerreotyped by simple mechanical pressure. It makes no matter what the color of the silk may be, black, red, yellow, blue, and white, —the *primary*, union, and nullified ray colors, all show the wave lines alike, when submitted to the same process. There are no sun rays required to produce this effect, but the sun light enables us to see into the philosophy of the matter, by holding up the doubled silk handkerchief.

Light is a subtle, imponderable fluid contained, perhaps, in every substance; it is highly developed in the sun beam, and by the combustion of various substances. It is given out in minute rays (so is electricity, we believe), which, when resisted by any medium, exhibit vibratory phenomena, like the watering of the silk. The fine lines of the silk are the resisting media, for plain surfaces like paper, cannot be watered. Twilled fabrics show exceedingly minute water lines, like the mingled wave lines from a number of centres, produced by throwing stones into a smooth pool of water. Fine silk also shows minute wave lines, because the deflecting lines are more numerous and less prominent. The phenomena of watering silk is well worthy of a place in all works on optics and natural philosophy. We hope that no elementary work of natural philosophy will hereafter be published without embracing an account of this beautiful developement of a law of nature in the production of a fabric esteemed as an article of dress by the rich, the fair, and gay.

Meat Biscuit.

The Galveston Civilian states that a factory with proper machinery for manufacturing Meat Biscuit, has been established in Galveston, Texas, by G. Borden, jr., and is called the Meat Biscuit Factory. According to the description, the meat is minced, then boiled till all the jelly or gluten is extracted; two pounds of this jelly, containing the nutriment of eleven pounds of meat, is then mixed with three pounds of flour, and baked till the five pounds are reduced to four. Each biscuit is then packed in pulverized biscuit of the same kind, in an air-tight case. The same journal says that the War Department have ordered a large quantity of this biscuit for the troops on the frontier; and it pronounces the article and the process of making it—a new discovery.

All this may be a valuable discovery, especially for travellers across the Western Deserts, and for troops stationed in quarters remote from sources of supply. And it may also be a valuable discovery for shipping, especially on long voyages, in furnishing a portable, agreeable, and nutritious article of food. But we beg leave to protest against the general novelty of the discovery, however *novel* it may be in Texas. This discovery was made in France, as early as 1830, if not earlier; and the article was then described as "animalized bread." The French journals described it, and stated that it had been ordered by the government for the armies in Algiers. In the French mode of manufacturing it, all parts of an ox, excepting the *hair*, were reduced to their elements, and the jelly or gluten extracted. The bones, the hide, the hoofs, horns, intestines and muscular fibre, were decomposed by heat, and their gluten separated from the lime and all other substances. And this was described as economical, the hoofs, and horns, and bones containing much gluten, and being more valuable for this purpose than any other. To our unsophisticated Anglo-Saxon tastes, the Texan mode, in which good minced meat, fit for a change at breakfast, is alone used, may seem the most acceptable. And the very thought of eating bread made from hides, hoofs, and horns, or the raw material for shoes, buttons, hair combs and powder horns, might occasionally put a fastidious appetite to flight. But this is mere prejudice; for chemistry can easily convert any thing into anything else.—[Philadelphia Ledger.

[So far as we have been able to gather information on the subject, we believe, that the French animalized bread was merely portable soup or gluten cakes. Mr. Borden's soup-bread is a different preparation, and he was granted a patent in 1851 for the same. He takes the very best quality of beef which can be found in Texas, and extracts the gelatine from it by a low steam heat. This is afterwards—in a state of spissatude—kneaded with flour or any kind of vegetable meat, into cakes, and baked slowly in an oven heated by steam. By using a high heat to extract the gelatine from the meat, a very unpleasant flavor is communicated to it, for the high heat sets a portion of the phosphorus contained in the bones free, and this gives an unpleasant odor to the extract. Mr. Borden carefully avoids this—his extract is of as fine a flavor as Liebig's portable soup, and the baking of it into cakes, along with vegetable substances, enables it to be carried with ease over mountain and sea, and tends to preserve it from atmospheric influence, so as to prevent putrefaction. In Texas beef is very cheap, so are fowls, such as turkeys, chickens, &c. Of this kind of meat, the very best alone is used by Mr. Borden. The patent claim is for the combination of the condensed extract of meat mixed with vegetable flour, either unbaked flour or crushed crackers, and the whole baked into biscuits. We have eaten some of Mr. Borden's biscuit, made into soup, and liked it very well; an ounce of it made a good hearty meal. The great object of Mr. Borden is to use the best and most healthy substances to make an unexceptionable animal bread. He thought at one time of locating himself in New York, but the cheapness of cattle in Texas presented a field for securing the best materials at a low price. It is the quality of this *bread* which constitutes its essential value, and it is the ambition of Mr. Borden to make this a new and useful article of American commerce. For sea voyages and long overland journeys, we believe it to be a grand compact article of food, and the time may come, when it will be found in every house in our land, as a most excellent and cheap basis of our soups.

The Telegraph in France.

In France the Telegraph has been a government concern entirely—the public not being permitted to use it. What a blessed lot of liberty such a people as the French must have, when they are prohibited by the government from using all the best means of communicating intelligence, either to friends or upon business matters. We will never believe that the people of France have arrived at a decent sense of liberty until the notorious passport system is abolished, and more personal freedom secured to the humblest of Old Gaul. In respect to the Telegraph, we perceive that a step has been taken in the right direction, by M. Le Verrier, in the name of a committee appointed to examine a Bill authorizing the use of the Electric Telegraph for private correspondence. He pays a decided compliment to the enterprise of the United States, in the rapid spread and extent of our telegraph lines, and he enforces the reasonableness of opening the French lines to the public, saying "this example may, in some respects, be turned to advantage in France."

Low Railroad Fares.

We believe that nothing will so much tend to the advantage of railroads as low paying fares. It is large numbers in the aggregate which tell best on the receipts after all. When our present postage law was reformed from 25 to 10 cents on letters for whatever distance, many predicted that the expense would far overtop the revenue. This has been tried and found to result in quite a different ballance—it being in favor of the low postage. There is a minimum point in low fares, but in many railroads they have not descended to that point, although if they would, we have no doubt, but, as in the case of letter postage, the results would be beneficial. We like to see cheap means for the many to travel. It makes man more human to see the world run round in a railroad car. Railroads are grand means for facilitating travel and brushing away the rust from drowsy swains, and nothing can tend more to this than cheap trains.

Twenty-five Dollars Reward

Calvin Waldo, Jailor, and B. F. Dickinson Deputy Sheriff, offer the above reward for the arrest of John W. Ross, who broke from the Orange Co. Jail, Chelsea, Vt., on the night of the 22d Feb. He is described as being about 5 feet 6 inches in height, about 18 yeaes old, had on a tweed sack coat of redish color, with black cotton velvet on the collar and cuffs—vest of the same kind of cloth with gilt buttons, dark grey pantaloons, redish colored silk plush cap, whiskers of about ten days growth and of sandy complexion.

Mr. Otis Brewer, publisher of the Boston Cultivator, says that the above described Ross was arrested on his account as an impostor, and was to have had his trial on the 25th ult. He had been operating as an agent for the Cultivator, New York Scientific American, and perhaps other papers, and his line of trade was from Burlington, Vt., through Montpelier, and down as far south as Randolph, and perhaps farther, representing himself as his son, and signing his name as Charles Brewer. We suppose that this is the same impostor noticed by us in No. 20, and we sincerely hope he will be arrested and that justice may be meted out to him; such scoundrels are too numerous by far.

The Promethus Steamship.

Mr. C. Vanderbilt has published a letter giving some account of the performance of this steamship. He says he built the Promethus upon principles which he thought correct for a sea steamer, and that she has run 5,590 miles consuming only 450 tons of coal. She ran 2,150 miles in eight days and nine hours. He concludes as follows:—

I consider the Promethus, in her combination of qualities, far superior to anything afloat. I will venture a large wager that there is no ship afloat, and none that can be built within twelve months, having any other plan of engines of the same size in proportion to the capacity of the ship, that can make a winter passage in the same time, with the same quantity of fuel.

Our Atlantic Steamers.

E. K. Collins, Esq., has presented a petition to Congress requesting a larger appropriation for his steamships. The reasons set forth are the great expense to which the projectors have gone to have a class of American steamships second to none in the world. The Committee of Ways and Means are favorable to the granting of an additional sum in aid of these our Atlantic steamships.

The Cheap Postage Bill.

This Bill has now become a law. We are soon to have three cent pieces coined, for the purpose of meeting the demands of this Bill. Three cents on letters—good; there is nothing like pushing along those reforms which benefit the millions. The next movement must be for a cheap ocean postage;—twenty-four cents for a letter to Liverpool, and *vice versa*, is not only bad policy, but it is an unjust charge for the service rendered. Ten cents would bring in more money to the Treasury.

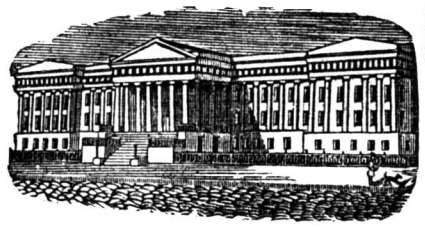
Pavements.

Mr. Davis, of this city, whose pamphlet we noticed, has called upon us and directed our attention to the iron plates in Broadway, which have been down for nine years. He wishes us to give his pavement a fuller investigation, as he is confident it is superior to all others. We will give the subject a fuller investigation, and speak honestly our convictions, as we do upon every subject, and we will freely point out wherein we may have been mistaken.

A Brother Gone.

Mr. F. J. Brognard, Editor of the New York Organ, departed this life on the 20th ult., after a short and severe illness of only 24 hours. We knew him to be a kind and amiable man, and an Editor of no ordinary abilities.

© 1851 SCIENTIFIC AMERICAN, INC.



☞Reported expressly for the Scientific American, from the Patent Office Records. Patentees will find it for their interest to have their inventions illustrated in the Scientific American, as it has by far a larger circulation than any other journal of its class in America, and is the only source to which the public are accustomed to refer for the latest improvements. No charge is made except for the execution of the engravings, which belong to the patentee after publication.

LIST OF PATENT CLAIMS
Issued from the United States Patent Office.
FOR THE WEEK ENDING FEBRUARY 26, 1851.

To John Pepper of Portsmouth, N. H., (assignor to Charles Warren and H.G. Sanford, of Boston, Mass.,) for improvements in Knitting Machines. Ante-dated Aug. 25, 1850.

I claim the half jack vibrating on the comb bar, connected with the sinker frame, and with the movable cross bar and springs, for the purpose of depressing the tail ends of the jack, and thereby raising their forward ends with the jack sinkers, as aforesaid.

I also claim the movable cross bar, containing the springs, connected as aforesaid, and for the purpose aforesaid.

I claim the cams in combination with the cross bar, with the projections thereon, hanging bars, vibrating pivots, the cam bar, and the half jack, connected with the sinker frame, and for the purposes aforesaid.

I claim the combination of the cam, and the shoe and shoe plate, for the purposes aforesaid.

I also claim the combination of the cam with the shoe, the movable shoe plate, the chains, the semicircles and hub, or wheel and hub, the bar connected with the slur carriage and the slur knob, and the horizontal bar, the carriage connected with the carrier needle, for the purposes aforesaid.

I also claim the combination of the cams, with the levers connected with the frame, and with the ribbed needle bar, for the purposes aforesaid, also the same in combination with the presses, connected, moved, and operating and for the purpose aforesaid.

To Moses Pond, of Boston, Mass., for improvement in Cooking Ranges.

I claim the improvements by which the hot water back is connected with the plate, and by means of which said hot water back may be either readily removed at any time or applied in such manner that the directions of its water pipes may be disposed so as to accommodate the bath boiler, into which they are usually led; or whatever side of the range the said bath boiler may be placed, the said improvements consisting, first, in the connecting piece, and the attachments of it and the hot water back, the whole being made to operate together substantially in the manner as above set forth; second, in a second set of attachments (fixed in the opposite face of the water back), in combination with the first set thereof, as described.

I also claim the peculiar arrangement of flues which lead the smoke and volatile products of combination, directly around the oven, the said arrangement of flues, causing the heat to course against one half of the bottom of the oven and into another flue, which takes it backwards and against the other half of the bottom of the oven, thence up a flue against the back of the oven; thence through a flue extending over and against half of the top of the oven, thence into and through the flue, which carries it backwards and over and against the top of the oven, and conveys it to the chimney or discharge flue, not meaning to include in such arrangement the radiating chamber or space hereinbefore mentioned.

And I also claim the two recesses and two flue plates, applied to plate R, in combination with the valve opening, their damper and cam plate, as applied to the top plate of the oven frame, and used under an arrangement of over flues, substantially as described, the same allowing of the adaptation of the oven to either side of the fire place, or the use of two such and their frames in connection with the fire place, all essentially as before stated.

I also claim the improvement by which the oven can be raised and readily removed, and by which the smoke is prevented from passing underneath the partition which separates the flues on the top of the oven, the same consisting in the sliding or gravitating plate affixed to the partition and made to operate substantially in the manner specified.

To Marvin Smith, of New Haven, Conn., for improvement in the bellows for Musical Instruments.

I claim the method, herein described, of making or constructing the wind chest commonly used in seraphines, melodeons, and all similar musical instruments, with one or more sides made of gum elastic materials, and in such way and manner as to be capable of expanding and contracting, or of being increased or diminished in size, and with the aid of metallic or other springs, to answer all the purposes of the common bellows generally used in these and similar instruments, substantially as described.

To J. B. Wilson, of Townsend Inlet, N. J., and Stacy Wilson, of Kensington, Pa., for improvement in applying friction rollers to hub and axles.

We claim the herein described method of applying friction rollers to the axles of the wheel carriages the interposition between the bearing of the axle and the faces of the friction rollers, of a loose sleeve, through which the axle is free to slide endwise, while it at the same time carries the sleeve round with it, in its rotation, the sleeve having a groove in its outer periphery, to receive the friction rollers and prevent them from moving endwise on the collar.

To J. D. Boers & Isaac Winslow, of Philadelphia, Pa., for improvements in Planing Machines.

We claim the combination of the shifting bed plate with the planes, constructed in the manner herein described, the planes presenting any desired part of their edge for cutting the surface of the board, after the tongueing and grooving has been performed by the circular saws.

We also claim the rotating arms with their cover, combined with the plane, substantially in the manner and for the purpose herein set forth.

To T. C. Avery, of New York, N. Y., for improvement in Electro-Magnetic Engines.

I claim the use and manner of arranging the helices and poles of the electro-magnets, in combination with the revolving bars or sets of bars; that is to say the helice being upon the bends of the magnets, from which the poles of the magnets extend towards and near to the centre of motion, and the revolving bars, or armatures, extending outwards from the centre of motion, and embracing the poles of the magnets, successively, as it rotates, for producing a magnetic, multiplying power engine, substantially in parts and principle as herein set forth.

To Joseph Banks, of New York, N. Y., for improved connection of the beams and columns of iron buildings.

I claim the method, herein described, of securing together the beams and columns of cast iron fronts for houses, by means of the lugs, with their flanges on the upper and under sides of the ends of the beam, and the projections on the inside at the top and base of the columns, as herein fully shown.

To Edward Clapp, (assignor to Edward Clapp & George Alden), of Dedham, Mass., for improvement in Sad Irons.

I claim the construction of the bottom of the polishing iron, the same consisting in making it with ridges or projections and concavities, substantially as described.

To T. F. Engelbrecht, of New York, N.Y.,) for improved Double-Acting Spring Hinge.

I do not claim the combination of an adjustable, curved inclined plane, with a portion of a hinge, and an adjustable bearing roller, with the other portion of the hinge.

But I claim the manner of combining the helical springs (two) with the cylindrical, rotating tumbler, and cylindrical, sectional case so that, by the rotation of the cylindrical tumbler, the heart-shaped projection will be made to traverse over the inclined plane, and cause the tumbler to rise and fall, and thus compress and expand the helical springs lengthening their coil, and simultaneously therewith, wind and unwind said helical springs, around the spindle, and thus cause them to act (by the motion of the door in either direction,) by torsion and expansion, to close the door, when it shall have been opened, as described.

To Francis Hoguet, of Philadelphia, Pa., for improvement in Extension Tables.

I claim the arrangement of a screw, or other equivalent device, in combination with the slides in such a manner, that a screw, or its equivalent, of sufficient length to move out one pair of slides, will move out any number described, substantially in the manner and for the purposes set forth.

To Wm. Sours, of Mount Jackson, Va., for improvement in Cooking Stoves.

I claim the transverse partition, in combination with the arrangement of front and back flues, as above described, for causing the several currents to unite after having traversed courses of nearly equal length, as set forth.

To Abner Lane, of Killingsworth, Conn., for improvement in machinery for turning irregular forms.

I do not claim merely the employment of two or more cutter wheels, cutter shafts, or cylinders, provided with any number of cutters of any required form, for cutting the whole surface and forming articles of any irregular form, without the use of the model of the article to be formed.

But I claim this only when the cutting cylinders are sustained, revolved, and carried to and from the block to be twined, by a revolving cylinder, in whose periphery they are placed, without any longitudinal or lateral motion, substantially as described.

To H. W. Sabin & Geo. Drew, of Canandaigua, N. Y., for improvement in Spring Hinges.

What we claim is the piece to one side of which the spring is attached, and which has, on the other, a projection, with a hole therein, by means of which and a pin, the spring can be engaged and disengaged, when the door is shut, substantially in the manner and for the purposes described.

To J. Sloan, of New York, N. Y., for machine for arranging and feeding screw blanks.

I claim the lifters which select and lift the blanks, &c., from the hopper, substantially as specified, in combination with ways or conductors, or the equivalents thereof, substantially as specified into or onto which the blanks, etc., are transformed, as specified.

I also claim giving to the lifters, or to the inclined ways, or their equivalents a lateral motion, in combination with a stop or detector, substantially as specified, for the purpose of arresting the operation of the lifters, until a further supply is required, as specified.

RE-ISSUES.

To Horace Boardman, of Plattsburgh, N. Y., for improved arrangement of Steam Boiler and Furnace thereof. Originally patented Aug. 14, 1849.

I claim the combination of a fire chamber and a water casing, the upper horizontal sections of both of which are greater than their lower, with a descending flue, the fire chamber and water casing being so arranged with respect to each other, that both the larger sections of the one adjoin the larger sections of the other, substantially in the manner and for the purposes herein set forth.

I likewise claim the injection of a jet or jets of air, at the flues or passages, which connect the combustion chamber, with the descending flue, for the purpose of igniting the gases and retarding the progressive motion towards the bottom of the gas chamber.

[We believe the principle of the last claim is at least ten years old.]

DESIGNS.

To S. H. Sailor (assignor to Warwick, Leibrandt & Co.), of Philadelphia, Pa., for Design for Cooking Stoves.

Music and Painting.

Music has been given us, by our bountiful Creator, to assist in smoothing the path of human life. The same being who has covered the face of nature with bright and beautiful colors, has filled the air with sweet and expressive sounds. He has taught us to listen to the melody of the birds, the sighs of the passing breeze, and the accents of the human voice, with feelings akin to those with which we gaze on the glorious heavens, the verdure of the woods, and the meadows enamelled with a thousand flowers. And He has taught us, too, to make our senses of the beauties of nature, derived from the eye or the ear, the foundation of two exquisite arts, by which not only our perceptions of these beauties are quickened and enhanced, but our intellectual and moral qualities are called into action. Painting and music perform much higher parts than that of merely ministering to human pleasure.

The Wants of Man.

Man is the most needy of all creatures. The horse constructs for itself a winter's dress, which is equally fit for wet or dry, day or night, out of the food it eats. The birds and fowls drop their feathers, but neither applies to the tailor or milliner for another suit; out of the seeds they consume, they produce robe and plumage of a texture and beauty which throw the apparal of a Solomon into the shade. The animals require neither plowing nor sowing, neither weaving nor cotton-spinning—mines, factories, furnaces, fires, workshops, nor bake-houses; but man is full of wants. Houses, fuel, furniture, clothing, cookery, vehicles, and books are necessaries of life, if we would make him what a human being ought to be. The productions of one country are rarely sufficient to supply his need. Animals have no wants which the soil on which they were born does not supply. The silk worm can live and rear its family, and construct its cocoon, in a mulberry tree. A few yards of space will suit it better than the range of the universe. The white bear, the reindeer, the elephant, the horse, the eagle, and the hippopotamus, have their own locality, from which they cannot move without risk. But if you confine man to a small circle, you may starve him in body and mind. He is the creature of all climes; he was made for all the world, and all the world was made for him. Wherever he goes he has something to sell or something to buy. Barter and traffic are no small part of his calling on earth, in which not only his physical, but also his intellectual and moral nature are called into full play. Were there no trade and intercourse between mankind, there could be no morality. Justice and benevolence are intended to sanctify the relations, associations, and dealings of the human family. Give us cultivated fields, skillful artizans, good manufactories, industrious workshops, well-manned ships, unrestricted commerce, free trade with all the world, and pure morality and philanthropy to regulate our proceedings, and we can place every comfort within the reach of every child of Adam, and thus mutually enrich and bless each other.

For the Scientific American.

The Terms "As Heavy" and "Heavier."

If a square foot of water weighs 1,000 ounces, and a square foot of iron weighs say 8,000 ounces, does it not follow that iron is eight times as heavy, and seven times heavier than water.

If the above terms are not synonymous, why is it that "heavier" is used instead of "as heavy" in many popular and scientific works, including your own journal lately, in your article on Hydrostatics? Partington's "British Cyclopædia" would say that iron is eight times as heavy as water, and not eight times heavier, which in my opinion would be one too many. W. B.

Old Cambridge, Mass.

[Our correspondent is correct about the precision of the terms which he speaks about, as can easily be proved, thus, say water 1, iron 8: 8—1=plus 7, or seven times heavier, eight times as heavy.

Chasm Tower Blown Down.

The Niagara Falls Iris of Saturday says this Observatory on Mount Eagle, was lifted by the wind from its foundation, on Saturday last, when the wire cables by which it was stayed were broken, and the whole mass fell to the ground a heap of ruins.

Crows.

It is but little more than forty years since the first crow crossed the Genesee river westwardly. They, with the fox, the hen hawk, swallow, and many other birds and insects, seem to follow in the track of civilization.

© 1851 SCIENTIFIC AMERICAN, INC.

TO CORRESPONDENTS.

"D. S. H., of Pa."—Mr. Jeremiah Carhart, No. 75 East 13th st., this city, manufactures excellent melodeon reeds; you had better send an order to him.

"C. E. of Mobile."—We have just received your letter, and will attend to the business without delay, and write you.

"C. E. F., of S. C."—You are mistaken, altogether. We made no such statement as you attribute to us. By reference to the article again, and by a careful study of it, you will see that we have not led you into an error, the fault being entirely your own. We said, emphatically, that "it would not," and not that "it would," as you say.

"E. W., of Mass."—You could not obtain a patent for the gutta percha as applied to cover the inside of pipes, because patents have been taken out for preserving metals by the application of gutta pereha to their surfaces. It is only a useless expense to apply it to cast iron pipes, for they are not subject to rust like wrought iron.

"G. W. S., of H."—We believe we understand your plan, but do not think it will answer, because the dropping of the ball will never be perfectly correct. The reason of this is, that the drift of the vessel as a body will attract it from the true perpendicular. If you try some experiments on a large moving body, you will find, we believe, that our views will be borne out. The best way to discover the amount of leeway is an indicator like Wilder's; but the great difficulty to get such plans to work well, is their liability to incorrect operation. This is the reason why the chronometer and quadrant, with the nautical almanac, are the only correct guides to navigators.

"J. B."—Will please forward a model of his improved butt to this office.

"J. B G. H., of Mass.—We have no extra number of the paper you refer to, to send. A gentleman from Luzerne Co., Pa., showed us the sketch of a plan for oiling journals by the use of a belt, some 6 months since; we do not remember his name. He was very sanguine of its success, and promised to furnish us the result of his experiments. We have not heard from him since. $2 received.

"T. R. C., of ———."—Will receive an answer to his letter in regard to the Corn Planter when he furnishes his proper address.

"D. T., of Mass."—We have never been able to obtain a perfect union of the two metals any more than yourself, but our correspondent says he has had the improvement, as mentioned, in operation. The plan he mixes them by is unknown to us, but there does not appear to be any reason for doubting that the one may be rendered positive and the other negative, and thus insure their union.

"R. W. W., of Ind."—There is nothing new or patentable in your coupling for carriages; essentially the same plan was shown us some time since. We cannot therefore advise you to spend money upon an application.

"A. B. of N. Y."—Mr. Francis is probably not the first inventor. The device may be more than four years old. We are uncertain on that point.

"S. W. R., of O."—There have been no changes made in Patent Laws since 1842. The edition of the Patent Laws which was published at this office two or three years since contains all the information you can get from any source.

"B. W. S, M. D., of Pa."—The postage on the Scientific American to your place is 1½ cents per copy. Many thanks for your fine list of subscribers. We have no second-hand steam engine of the capacity you mention on hand, nor do we know of any to sell in this vicinity.

"G. B. W., of Conn., and O. C., of Ill.—The engravings of your inventions will appear in next week's paper.

Money received on account of Patent Office business, since Feb. 26, 1851:—

S. T., of Conn., $55; S. F., of N, Y., $20; M. F. G., of Iowa, $15; W. N., of N. Y., $30; J. O., of Conn., $10; J. G. W., of N. Y., $20; S. I, of N. Y., $20; J. W., of N. Y., $20; W. G., of N. Y., $20, and F. A. & D. S. R., of Conn., $45.

Every correspondent should be particular and attach the name of the State as well as the town from which he writes. We have letters now on file which came to hand with inclosures of money, but from the carelessness of the writer, no State mentioned in any part of the letter, hence the cause of many not getting replies. N. B. L., of East Sharon; F. L., of Jay Bridge; D. R., of Jason; and F. D., of ———, Mich., please read the preceeding paragraph and learn wisdom.

"S. B., of N. Y."—We shall examine your sketch at an early date and report our views by letter.

ADVERTISEMENTS.

Terms of Advertising:

One square of 8 lines, 50 cents for each insertion.
" 12 lines, 75 cts., " "
" 16 lines, $1,00 " "

Advertisements should not exceed 16 lines, and cuts cannot be inserted in connection with them at any price.

American and Foreign Patent Agency.

IMPORTANT TO INVENTORS.—The undersigned having for several years been extensively engaged in procuring Letters Patent for new mechanical and chemical inventions, offer their services to inventors upon most reasonable terms. All business entrusted to their charge is strictly confidential. Private consultations are held with inventors at their office from 9 A. M., until 4 P. M. Inventors, however, need not incur the expense of attending in person, as the preliminaries can all be arranged by letter. Models can be sent with safety by express or any other convenient medium. They should not be over 1 foot square in size, if possible.

Branches of our Agency have been established in London, under the charge of Messrs. Barlow, Payne & Parken, celebrated Attornies, and Editors of the "Patent Journal;" also in Paris, France, under the charge of M. Gardissal, Editor of the "Brevet d'Invention." We flatter ourselves that the facilities we possess for securing patents in all countries where the right is recognized, are not equalled by any other American house.

MUNN & CO.,
128 Fulton street, New York.

PATENT BREAD CUTTER—The subscriber will sell rights for this very valuable article, for a single State or for all the States except Vermont, Maine, Massachusetts, Rhode Island, Connecticut, New York, Missouri, Illinois, and Iowa, on reasonable terms. The Cutter will be wanted in almost every family, and will sell readily at a large profit to the manufacturer. Personal application or by letter, post paid, to the subscriber, at Berlin, Conn., will receive prompt attention. FRANKLIN ROYS. 25 4*

WANTED—An Hydraulic Press for making imitation Sperm Candles. Direct, pre-paid, with full particulars, to WM. SMITH, Bristol Centre, Ct.

VALUABLE PATENT FOR SALE—Embracing Massachusetts (with the exception of two small counties, and a few towns of minor consequence), Connecticut, and Rhode Island, entire. The assignment of Morse's Patent Tan, Sawdust, Peat, and other fine fuel Burner for heat, the cost of such fuel being nothing, together with a complete assortment of patterns, is now offered for sale for a term of about ten years, (patented 1846), on advantageous terms, with a stock of stoves ready for use, with the same if desired. The stoves yield a good profit, many hundred have been and many thousands must be sold.

The assignment belonging to a firm dissolved, must be sold to close the concern. To those persons who are using this patent unlawfully, I say you are known and watched, and will soon be called upon to render an account for such violation. For further particulars inquire of E. F. DIXIE, Worcester, Mass. 24 3*

MACHINES FOR CUTTING SHINGLES AND STAVES.—The undersigned is the owner of the following States of Wood's Improved Shingle Machine, Patented Jan. 8th, 1850, viz., Maine, New Hampshire, Vermont, Delaware, Maryland, Virginia, North and South Carolina, Georgia, Alabama, Florida, Arkansas, New Mexico, California, Oregon, District of Columbia, and one half of Connecticut. The above territory is for sale with or without the machines. No machine ever patented can do the same amount of work in so perfect a manner. Address CHARLES WATERMAN, West Meriden, Ct. 24 4*

BROWN'S PATENT COUPLING FOR HOSE AND PIPES.—This valuable invention (which was illustrated and described in No. 42, Vol. 5, Sci. Am.) is now offered for sale on reasonable terms in either town, county, or State rights. For further information address, post-paid, the inventor and patentee, A. H. BROWN, Commercial Buildings, Albany, N. Y. 24 2*

NOTICE TO MACHINISTS.—Wanted, immediately, a competent hand as foreman of a machine shop, where the principal work done is building stationary steam engines. An industrious man with steady habits, who can give testimonials of his ability to do, and direct work in such a shop, will be sure of employment at generous prices, if application be made soon. Reference—Wm. Kemble, 79 West st., N. Y. Address E. W. HUDNUTT & CO., Geneseo, Livingston Co. N. Y. ☞ Wanted, 2 or 3 good machinists. 24 4*

PATENT DREDGE BOAT.—The subscriber having obtained a patent for improvements on the Dredge Boat, offers to sell rights to build and to use his Patent Dredge Boat in any part of the United States; the excavating apparatus consists of twenty scoops, preceded by plows receiving great pressure, and are capable of raising eight or ten cubic yards of mud or gravel per minute; the scooping apparatus may be fitted on an old steamboat or other vessel, for the purpose of removing bars or other obstructions to navigation. A working model may be seen by calling on the subscriber. JAMES CALLAGHAN,
20 10* No. 64 Spruce st., New Bedford, Mass.

WILLIAM W. HUBBELL—Attorney and Counsellor at Law, and Solicitor in Equity, Philadelphia, Penn.

ELECTROTYPE PATENT FOR SALE.—The subscriber offers for sale the right of his process for preventing adhesion in the Electrotype operation. Engraved plates of the finest kind, amounting in value to nearly $100,000, have now been duplicated by this process, without the slightest injury having occurred in any instance. It is believed that a respectable business in multiplying engraved plates could be established in any of the large cities, especially if carried on in conjunction with electro-plating and gilding. Only three rights will be sold, which will be for Boston, New York, and Philadelphia, or an exclusive right for one city, and these rights will exclude all others, excepting one to be reserved for some place south of Pennsylvania, and the right now owned by the United States Government. GEORGE MATHIOT, Washington, D C. 23 3*

THE NASHVILLE MANUFACTURING Company (chartered by the State of Tennessee) being now engaged in the erection of extensive machine works, wish to engage the services of a person thoroughly competent to manage the same. It is the intention of the Company to engage extensively in building locomotives, steam engines, &c. None but such as can furnish undoubted testimonials for skill, energy, and other requisites to fill the station, need apply. The Company also wish to employ a number of machinists, founders, &c., and would also receive propositions for the necessary tools, &c., for such an establishment. Immediate application, by letter or personally, to the undersigned, will meet attention.

S. D MORGAN, Prest. Nashville Man. Co.
Nashville, Tenn., Jan 17, 1851. 21 6*

TO LUMBER DEALERS.—Law's Planer having undergone important alterations, is now perfected and in successful daily operation, facing and matching at the same time, and in both respects, in a style not to be surpassed. The common objection that machines are expensive in repairs, is not applicable to these new machines—they are simple, strong, and easily kept in order. It is confidently believed that when they are well known they will have a decided preference over any other machine or mode of planing. Planing of all kinds done at short notice, corner of Water and Jay sts., Brooklyn. Law's Stave Machine dresses and joints staves of all kinds, shapes, and widths, by once passing through. Rights or machines for sale by H. LAW, 216 Pearl street, or after 1st March, at 23 Park Row. 21 8

HUTCHINSON'S PATENT STAVE MACHINE.—C. B. HUTCHINSON & CO., Waterloo, N. Y., offer for sale town, county and State rights, or single machines, with right to use the same. This machine was illustrated in No. 2, Vol. 5, Sci. Am.; it will cut from 1,500 to 2,000 perfect staves per hour. We manufacture machines of different sizes, for keg, firkin, barrel and hogshead staves; also, heading shingle, and listing and jointing machines. These machines may be seen in operation at St. Louis, Mo.; Chicago, Ill.; Savannah, Ga.; Madison, Ia.; Ithaca, N. Y.; Waterloo, N. Y.; Bytown, C. W. Letters directed to us, post-paid, will receive prompt attention. 15 3m*

LEONARD'S MACHINERY DEPOT, 116 Pearl st., N. Y.—The subscriber has removed from 66 Beaver st. to the large store, 116 Pearl st., ayd is now prepared to offer a great varlety of Machinists' Tools, viz., engines and hand lathes, iron planing and vertical drilling machines, cutting engines, slotting machines, universal chucks, &c. Carpenters' Tools—mortising and tennoning machines, wood planing machines, &c. Cotton Gins, hand and power, Carver Washburn & Co.'s Patent. Steam Engines and Boilers, from 5 to 100 horse power. Mill Gearing, wrought iron shafting and castings made to order. Particular attention paid to the packing, shipping, and insurance, when requested, of all machinery ordered through me. P. A. LEONARD.
15 3m

SCRANTON & PARSHLEY, Tool Builders, New Haven, Conn., will have finished 2 Power Planers ready to ship by the 1st of Feb., that will plane 9 feet long, 31 inches wide, and 24 inches high, with angle feed; counter shaft, pullies, and hangers, splining and centre heads, with index plate, and weigh over 5,000 lbs.; also 2 power planers that will plane 5 feet long, 22 in. wide, and 20 in. high, with counter shaft, pullies, and hangers, and weigh 2,400 lbs.—These planers are 25 per cent. lower than any others built. Cuts can be had by addressing as above, post paid. 19tf

LINEN AND HEMP MACHINERY.—I am prepared to contract with companies or individuals for the building of machinery by which linen can be produced as cheap as cotton, from either unrotted hemp or flax; also for making rope or bagging of unrotted hemp—the same machinery which I am now successfully using in the manufacture of kyanized cordage. O. S. LEAVITT.
Maysville, Ky., Jan 23, 1851. 21 4*

GROSHON'S PATENT CORN PLANTER. The inventor and patentee of this excellent invention, which was described in No. 40, Vol. 5, Scientific American, desires to dispose of State, County, or Town rights on reasonable terms. Address J. P. GROSHON, Yonkers, N. Y., post-paid. The invention has been awarded premiums from the American Institute and State Fair. 24 2*

IRON FOUNDERS MATERIALS—viz., fine ground and Bolted Sea Coal, Charcoal, Lehigh Soapstone and Black Lead Facings of approved quality. Iron and brass founders' superior Moulding Sand, Fire Clay, Fire Sand, and Kaolin; also best Fire Bricks, plain and arch shaped, for cupolas &c.; all packed in hogsheads, barrels or boxes for exportation, by G. O, ROBERTSON, 4 Liberty Place, near the Post Office, N. Y. 22 3m*

CLOCKS FOR CHURCHES, PUBLIC Buildings, Railroad Stations, &c.—The subscriber having made important improvements in the apparatus for counteracting the influence of the changes of temperature upon the pendulum, and in the retaining power, together with a most precise method of adjusting the pendulum to correct time, are prepared to furnish Clocks superior to any made in the United States, both for accuracy of time-keeping and durability. They speak with confidence, from having tested their performance for several years. All clocks ordered and not proving satisfactory, may be rejected. Address SHERRY & BYRAM,
Oakland Works, Sag Harbor, L. I.

"Mr. Byram has established his reputation as one of the first clock makers in the world"—[Scientific American. 17 5eow*

MATAPAN MACHINE WORKS—Corner of Second and A sts., South Boston. The undersigned have recently enlarged their business and are now prepared to offer a great variety of Machinists' Tools, viz., Engine and Hand Lathes, iron Planing and Vertical Drilling Machines, Cutting Engines, Slotting Machines, and Universal Chucks; also Mill Gearing and Wrought Iron Shafting made to order.
22 12* GEO. HEPWORTH & SON.

DICK'S GREAT POWER PRESS.—The public are hereby informed that the Matteawan Company, having entered into an arrangement with the Patentee for the manufacture of the so-called Dick's Anti-Friction Press, are now prepared to execute orders for the following, to which this power is applicable, viz.—Boiler Punches, Boiler Plate Shears, Saw Gummers, Rail Straighteners, Copying and Sealing Presses, Book and Paper Presses, Embossing Presses, Presses for Baling Cotton and Woollen Goods—Cotton, Hay, Tobacco, and Cider Presses; Flaxseed, Lard, and Sperm Oil Presses; Stump Extractors, &c. &c. The convenience and celerity with which this machine can be operated, is such that on an average, not more than one-fourth the time will be required to do the same work with the same force required by any other machine.

WILLIAM B. LEONARD, Agent,
13tf No. 66 Beaver st., New York City.

MACHINES FOR CUTTING SHINGLES. The extraordinary success of Wood's Patent Shingle Machine, under every circumstance where it has been tried, fully establishes its superiority over any other machine for the purpose ever yet offered to the public. It received the first premium at the last Fair of the American Institute—where its operation was witnessed by hundreds. A few State rights remain unsold. Patented January 8th, 1850,—13 years more to run. Terms made easy to the purchaser. Address, (post-paid) JAMES D. JOHNSON, Redding Ridge, Conn., or Wm. WOOD, Westport, Conn.. All letters will be promptly attended to. 10tf

GURLEY'S IMPROVED SAW GUMMERS —for gumming out and sharpening the teeth of saws can be had on application to G. A. KIRTLAND, 205 South st., N. Y. 10tf

A CARD.—The undersigned begs leave to draw the attention of architects, engineers, machinists, opticians, watchmakers, jewellers, and manufacturers of all kinds of instruments, to his new and extensive assortment of fine English (Stubs) nd Swiss Files and Tools, also his imported and own manufactured Mathematical Drawing Instruments of Swiss and English style, which he offers at very reasonable prices. Orders for any kind of instruments will be promptly executed by F. A. SIBENMANN, Importer of Watchmakers' and Jewellers' Files and Tools, and manufacturer of Mathematical Instruments, 154 Fulton street. 1 6m*

TO PAINTERS AND OTHERS.—American Anatomic Drier, Electro Chemical graining colors, Electro Negative gold size, and Chemical Oil Stove Polish. The Drier, improves in quality, by age—is adapted to all kinds of paints, and also to Printers' inks and colors. The above articles are compounded upon known chemical laws, and are submitted to the public without further comment. Manufactured and sold wholesale and retail at 114 John st., New York, and Flushing, L I., N. Y., by

QUARTERMAN & SON,
22tf Painters and Chemists

MACHINERY.—S. C. HILLS, No. 12 Platt Street, N. Y., dealer in Steam Engines, Boilers, Iron Planers, Lathes, Universal Chucks, Drills Kase's, Von Schmidt's, and other Pumps, Johnson's Shingle machines, Woodworth's, Daniel's and Law's Planing machines, Dick's Presses, Punches, and Shears; Morticing and Tennoning Machines, Belting, machinery oil; Beal's patent Cob and Corn Mills; Burr Mill, and Grindstones, Lead and Iron Pipe, &c. Letters to be noticed must be post paid. 10tf

BAILEY'S SELF-CENTERING LATHE, for turning Broom and other handles, swelled work, chair spindles, &c.; warranted to turn out twice the work of any other lathe known—doing in a first rate manner 2000 broom handles and 4000 chair spindles per day, and other work in proportion. Orders, post-paid, may be forwarded to L. A. SPALDING, Lockport, N. Y. 21tf

FOREIGN PATENTS.—PATENTS procured in GREAT BRITAIN and her colonies, also France Belgium, Holland, &c., &c., with certainty and dispatch through special and responsible agents appointed, by, and connected only with this establishment.—Pamphlets containing a synopsis of Foreign Patent laws, and information can be had gratis on application

JOSEPH P. PIRSSON, Civil Engineer,
24tf Office 5 Wall street, New York.

RAILROAD CAR MANUFACTORY.—TRACY & FALES, Grove Works, Hartford, Conn. Passage, Freight and all other descriptions of Railroad Cars, as well as Locomotive Tenders, made to order promptly. The above is the largest Car Factory in the Union. In quality of material and in workmanship, beauty and good taste, as well as strength and durability, we are determined our work shall be unsurpassed. JOHN R. TRACY,
16tf. THOMAS J. FALES.

FOWLERS & WELLS, Phrenologists and Publishers, Clinton Hall, 131 Nassau st., New York—Office of the Water Cure and Phrenological Journals. Professional examinations day and evening. 3 6m

MANUFACTURERS' FINDINGS and Leather Binding.—The subscriber is prepared to offer a large assortment of manufacturers' Findings for Cotton and Woollen Factories, viz., bobbins, reeds, harness, shuttles, temples, rockers, harness twines varnish, roller cloth, card clothing, card stripper and clamps, calf and sheep roller, leather, lace, and picker string, potato & wheat starch, oils, &c. Leather Banding, of all widths, made in a superior manner from best oak tanned leather, rivetted and cemented.
15 3m P. A. LEONARD, 116 Pearl st.

UNITED PATENT OFFICE IN PARIS AND LONDON.—GARDISSAL & CO., 9 Arthur st., west, city, London; Paris, 29 Boulevard St. Martin.—Procuration of Patents for England, Ireland, Scotland, France, and all countries; and transactions of all business relating to patents, (sale and licenses,) specifications, oppositions, &c. "The Invention," monthly journal, $1 a-year. 15 4m*

LAP-WELDED WROUGHT IRON TUBES for Tubular Boilers, from 1 1-4 to 7 inches in diameter. The only Tubes of the same quality and manufacture as those so extensively used in England, Scotland, France and Germany, for Locomotive, Marine, and other Steam Engine Boilers.

THOS. PROSSER & SON, Patentees,
16tf 28 Platt st., New York.

BROOM MACHINERY.—The most improved and durable machinery for the manufacture of Brooms, for sale by JACOB GRAY, Scotia, Schenectady Co., N. Y. Address post-paid. 22 8*

THE SUBSCRIBER is now finishing four 14 horse engines, with boiler and apparatus all complete—price $1200 each. Several 6 horse engines extremely low; also, several of smaller capacity, complete; also, several power planers, now finishing.—Galvanized chain for water elevators, and all fixtures—price low—wholesale and retail. Orders, post-paid, will receive prompt attention. AARON KILBORN.
No. 4 Howard st., New Haven, Conn. 18 10*

© 1851 SCIENTIFIC AMERICAN, INC.

Scientific Museum.

Edge Tools.

Experience has proved, that instruments which are the hardest acquire the keenest edge, and are the most capable of cutting; but then a great degree of hardness always occasions the metal to be brittle; and when the edge is very fine, such instruments are useless for dividing hard substances, because the sharp part is not tenacious enough to endure the operation without snapping asunder. It is necessary, therefore, to be content with less hardness, in order to obtain the requisite tenacity, and this is effected by the operation called tempering.

Hence, when an instrument has been properly hardened, it must be softened again in some measure, or to that degree which is thought to be most suitable for that particular purpose for which it is intended. To effect this, it is heated again only to a certain point, which is usually determined by the color which the metal assumes, and then it is instantly plunged into cold water. This is called letting it down to the proper temper.

In France it has been the practice, in hardening small steel instruments, to cover them with soft soap, and then to roll them in common salt. This treatment prevents the articles from scaling, and does not prevent the hardening. The salt fluxes to a glass, which covers the metal and protects it from oxidizement.

The usual mode of ascertaining the temperature to which any edge tool has arrived, is by attending during the operation to the shades of color, which, as the metal becomes more and more heated, the bright parts assume in rotation, and then when it has acquired that particular hue which may be desired, removing it from the fire into water. But the nature of the operation is such, that this must always be attended with some uncertainty, especially as different tools require different management in the process, and it is very often a very uncertain task to give the same temperature to every part of the same instrument.

In tempering edge tools, the first color, which appears at 430° of Fahrenheit, is very pale and only a little inclining to the yellow; this is the temperature at which lancets are usually tempered.

At a little higher temperature, say 450°, the pale straw color appears, which is a heat suitable for the best razors and most of the surgical instruments. Then comes the full yellow, at 470°, which is proper for common razors, penknives, and some other implements of surgery.

By increasing the temperature to 490°, the brown color will be produced, which is generally looked for by these who have to temper garden-hoes, small shears and scissors, and all those chisels which are designed for cutting cold iron. Then at 510° comes the brown, dappled with purple spots, which shows the proper heat for tempering axes, firmer chisels, plane-irons, and pocket knives. The next color in succession is the purple, at 530°, the heat at which table-knives and large shears are usually tempered. The next is the bright blue, at 550°, which will give a proper temper to swords, watch-springs, springs for trusses, bell springs, &c. Then comes the full blue, at 560°, which being the highest spring temper, is usually employed for small fine saws, daggers, augers, &c. This is the proper heat, also for tempering most of those instruments which require to be elastic. The last degree in succession is the dark blue, approaching to black, which shows itself at 600°, and is the softest of all the gradations of temper, when the metal becomes suitable to few other instruments than hand and pit saws, which are necessarily made very soft in the first instance, that the workman may be able to file them up, and set them, whenever they find occasion for it, without being obliged to soften them every time that operation is to be performed. This great heat is likewise employed in tempering some particular kinds of springs.

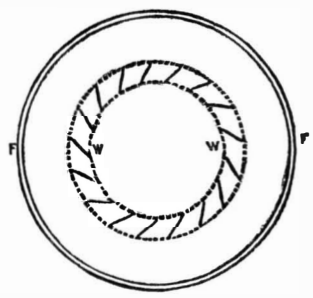
Some curious facts respecting the properties of blued steel, are related by Mr. Nicholson, on the testimony of Mr. Stodart, who says, "that he has found the spring, or elasticity of steel to be greatly impaired by taking off the blue with sand-paper, or otherwise; and, what is still more striking, that it may be restored again by the blueing process, without any previous hardening, or other additional treatment.

For the Scientific American.

Hydraulics.

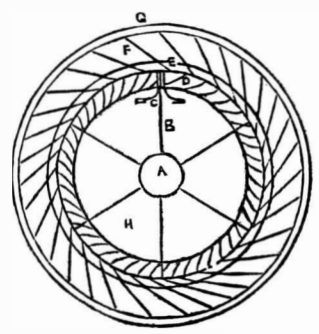
(Continued from page 192.)

Fig. 31.



The Centre Vent Wheel.—This wheel is named "Haviland & Tuttle's Vent." It was exhibited in New York two years ago in the form of a small model working in a glass case, whereby all its motions and behavior could be distinctly observed. It was patented a few years ago, and the patent contained a description of having the vanes or buckets made so as to be easily shifted, to increase or diminish the area of discharge. It was found in practice that the construction of the wheels with the movable floats, was expensive and troublesome, and did not confer the benefits anticipated. None of the working wheels therefore are made with the moveable vanes. F F, represents the glass case in which the model wheel was kept and run. The water was admitted by a pipe of croton supply at the top. It was injected from the outside and passed out down below through the central part. In reference to its performance, we find on page 26, Vol. 4, Sci. Am., that these wheels are manufactured at the Fulton Iron Foundry, South Boston, and that one wheel 5 feet in diameter, with a pair of 5 feet burr stones ground 40 bushels of corn into merchantable meal in one hour. The height of fall was 7 feet. The stones made 144 revolutions per minute; under a head of four feet, 25 bushels of good meal were ground in one hour.

Fig. 32.



Howd's Centre Discharge Wheel.—Fig. 32 is a plan view; A is the vertical shaft; B represents the arms; C are the hangers to suspend the rims; D are the rims and buckets; E is the bulkhead; F are the spouts to conduct the water to the wheel; G is the circular water gate. Mr. Carter Hughes, of Detroit, in his work "the American Miller," considers this kind of wheel to be superior to the overshot, and he says it is an error of principle in their construction to have the discharge of the water at the circumference instead of the centre. The centre discharge is considered the best by him. He believes the French Turbine to be wrong in principle and wrong of action. He condemns the working of Re-action Wheels by securing them on horizontal shafts.

Iron Pavement.

Iron is daily coming into more general use for almost every purpose. A letter from Paris, of a late date, says:

"A new pavement, to upset the Macadam and other inventions of the kind, has been proposed by Mr. Tobard, who intends paving, in his way, the streets and boulevards of Paris. This gentleman proved by figures that melting iron is only worth 11 francs in Paris, 7 francs in Belgium, and 4½ francs in England —whilst the stone costs 25 francs in London, 15 francs in Paris, and 8 and 10 francs in Belgium. This new mode of pavement will be grooved, in order not to become slippery, and it is said that the electricity occasioned by the rolling of the carriages will prevent rust."

[It is a common opinion among many men, that cast-iron rusts as fast as wrought iron; this is a great mistake. Cast-iron is almost anti-rustative. No person need be afraid of cast-iron going to decay by rusting. We have but little confidence in iron pavements for the streets of cities.

Take Care of the Feet.

"Of all parts of the body," says Dr. Robertson, "there is not one which ought to be so carefully attended to as the feet." Every person knows from experience that colds and many other diseases which proceed from the same, are attributable to cold feet. The feet are at such a distance from "the wheel at the cistern" of the system, that the circulation of the blood may be very easily checked there. Yet, for all this, and although every person of common sense should be aware of the truth of what we have stated, there is no part of the human body so much trifled with as the feet. The young and would-be genteel footed cramp their toes and feet into thin-soled, bone-pinching boots and shoes, in order to display neat feet, in the fashionable sense of the term. There is one great evil, against which every person should be on their guard, and it is one which is not often guarded against—we mean the changing of warm for cold shoes or boots. A change is often made from thick to thin soled shoes, without reflecting upon the consequences which might ensue. In cold weather boots and shoes of good thick leather, both in soles and uppers, should be worn by all. Water-tights are not good if they are air-tights also; india rubber overshoes should never be worn except in a wet splashy weather, and then not very long at once. It is hurtful to the feet to wear any covering, that is air-tight over them, and for this reason india rubber should be worn as seldom as possible. No part of the body should be allowed to have a covering that entirely obstructs the passage of the carbonic acid gas from the pores of the skin outwards, and the moderate passage of air inwards to the skin. Life can be destroyed in a very short time, by entirely closing up the pores of the skin. Good warm stockings and thick-soled boots and shoes are conservators of health, and consequently of human happiness.

To Dye a Good Black.

Rub a brass kettle with soft soap, turn upside down in a warm place twenty-four hours, then fill with soft water, rubbing the verdigris from the kettle into water. Put your logwood in a bag and soak in a warm place several hours. Put your cloth in wet, and boil gently two hours or more, airing constantly and stirring well. Wash thoroughly before dyeing.—[Exchange.

[This receipt will never dye a black, although the goods were boiled for a year in the logwood. To dye a black on wool, first have the goods clean, then boil them in an iron or copper vessel, along with three ounces of copperas and one of the sulphate of copper, to the pound of goods for about one hour. After this they should be taken out, quickly handled and dried and well dripped and boiled in a solution of logwood at the rate of half a pound to the pound of goods, for about one hour, after which they should be taken out, well dried and washed. This makes a blue black. If some fustic is used along with the logwood, the color is made a jet black. If the color be grayish, it wants more logwood, if brown, it has too much logwood. The logwood should be in a bag, or else boiled in a separate vessel, and the liquor only used. This will dye woolen yarn and cloth. The bichromate of potash is now used in place of the sulphate of copper. It makes a good and fast black and is an excellent mordant for white goods, but is not suitable for dyeing goods that may have had some other color. The receipt we have given will re-dye old goods. The goods should be well stirred and not crowded too close in the boiler. If not quickly handled when taken out, they will be wrinkled and consequently spoiled in a measure, for wrinkles are not easily taken out. Silk and cotton cannot thus be colored black.

Effect of Nitric Acid upon Bones and Flesh.

During the trial of Dr. Webster, in Boston, Professor Horsford testified that he had tried experiments upon the effect of nitric acid in dissolving bones and flesh. He selected the hock-bone of beef, using the commercial nitric acid. In about four hours and twenty minutes the bone had disappeared, and in an hour more the vessel was entirely clear, with no trace of the bone. The flesh disappeared in three or four hours. No smell was perceived. Professor Horsford thought it would take rather more nitric acid than the weight of the whole flesh and bone to dissolve a human body. In the experiments a little more than four pounds of acid were used to four pounds of bone.—[Annual of Scientific Discovery.

LITERARY NOTICES.

Statics of Gaspard Monge.—This is an elementary treatise upon a subject, without a knowledge of which no engineer, millwright, nor architect can be master of his business. The author of the work is a Frenchman, and the translator is Woods Baker, A M., of the U. S. Coast Survey. It is written and illustrated in that clear and philosophic style of authorship peculiar to Frenchmen. It is the best elementary treatise on the subject that we have consulted, and is for sale by C. M. Saxton, No. 123 Fulton st., N. Y.

Graham's American Magazine, for March, is a superb number, containing 144 pages of original matter, the same size as "Harper's" and the "International." Graham is determined to take the front rank in the Magazine line, and if this may be taken as a specimen, he will do it effectually. The contributions are of the most sterling character, and all by American authors. We wish this serial the largest success. Messrs. Dewitt & Davenport, agents.

Holden's Dollar Magazine, for March, is received. We notice that the Messrs. Duyckwick, Editors of the "Literary World," will conduct this Magazine for the future, Messrs. Fowler and Deitz retiring. The new Editors promise well, and we can say to the readers of Holden that they will do all they promise—they have the facilities and enterprise. We have always spoken warmly in praise of this Magazine. It deserves all we have said of it.

The Photographic Art Journal.—No. 2 of this Journal contains a likeness of M. M. Lawrence; it also contains Robert Hunt's Researches on Light. This periodical is a very able one indeed; it is a monthly, published by W. B. Smith, Ann st., New York.

Wacousta: by Maj. Richardson. This thrilling historical romance has just been published by Dewitt & Davenport. It is well worth perusal.

MECHANICS

INVENTORS
AND
MANUFACTURERS.

The Best Mechanical Paper
IN THE WORLD!
SIXTH VOLUME OF THE
SCIENTIFIC AMERICAN.

The Publishers of the SCIENTIFIC AMERICAN respectfully give notice that the Sixth Volume of this valuable journal, commenced on the 21st of September last. The character of the Scientific American is too well known throughout the country to require a detailed account of the various subjects discussed through its columns.

It enjoys a more extensive and influential circulation than any other journal of its class in America.

It is published weekly, as heretofore, in *Quarto Form*, on fine paper, affording, at the end of the year, an *ILLUSTRATED ENCYCLOPEDIA*, of over FOUR HUNDRED PAGES, with an Index, and from FIVE to SIX HUNDRED *ORIGINAL ENGRAVINGS*, described by letters of reference; besides a vast amount of practical information concerning the progress of SCIENTIFIC and MECHANICAL IMPROVEMENTS, CHEMISTRY, CIVIL ENGINEERING, MANUFACTURING in its various branches, ARCHITECTURE, MASONRY, BOTANY,—in short, it embraces the entire range of the Arts and Sciences.

It also possesses an original feature not found in any other weekly journal in the country, viz., an *Official List of PATENT CLAIMS*, prepared expressly for its columns at the Patent Office,—thus constituting it the "*AMERICAN REPERTORY OF INVENTIONS.*"

Terms—$2 a-year; $1 for six months.
All Letters must be Post Paid and directed to
MUNN & CO.,
Publishers of the Scientific American,
128 Fulton street, New York.

INDUCEMENTS FOR CLUBBING.

Any person who will send us four subscribers for six months, at our regular rates, shall be entitled to one copy for the same length of time; or we will furnish—

10 copies for 6 mos., $8 | 15 copies for 12 mos., $22
10 " 12 " $15 | 20 " 12 " $25

Southern and Western Money taken at par for subscriptions; or Post Office Stamps taken at their full value.

PREMIUM.

Any person sending us three subscribers will be entitled to a copy of the "History of Propellers and Steam Navigation," re-published in book form—having first appeared in a series of articles published in the fifth Volume of the Scientific American. It is one of the most complete works upon the subject ever issued, and contains about ninety engravings—price 75 cents.

© 1851 SCIENTIFIC AMERICAN, INC.